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ABSTRACT

Intended for secondary vocational agriculture teachers, this curriculum guide contains a course outline and a resource manual for a seven-unit food processing course on meats. Within the course outline, units are divided into separate lessons. Materials provided for each lesson include preparation for instruction (student objectives, review of teaching materials, materials required), presentation of lesson (content outline, suggested student activities), and lesson examination. The resource guide contains annotations of resources suitable for use with each of the seven units in the meats course. For each unit, the resources are divided into these five categories: texts, pamphlets, slides, filmstrips, and charts. Each annotation contains these types of information: title, summary of contents (including number of pages), and source (publisher or developer, address, and telephone number). The seven units cover meat identification, buying meat, nutrition, meat cookery, meat processing, meat grading and evaluation, and animal slaughter. (YLB)

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STATE OF LOUISIANA

DEPARTMENT OF EDUCATION

FOOD PROCESSING CURRICULUM MATERIAL AND RESOURCE GUIDE

Issued by

Office of Vocational Education

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U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
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FOREWORD

This curriculum guide is a result of extensive work on the part of numerous agricultural educators. The materials included here were developed for the express purpose of aiding secondary vocational agriculture teachers. The hope is that by having practical and usable teaching materials in their hands, teachers will be able to make improvements in their instructional program as well as have increased time available to spend on other phases of the total vocational education program.

Thomas G. Clausen

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INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT I: Meat Identification

Lessons: 1--Identification of Meat by Coloration, Size, and Fatty Tissue

2—Identification of Retail Cuts by Bone Structure

LESSON 1: Identification of Meat by Coloration, Size, and Fatty Tissue

I. Preparation for Instruction

A. Student Objectives

1. **Terminal:** Upon completion of this lesson, students will be able to differentiate between beef, veal, pork, and lamb by color, size, and fatty tissue.

2. **Specific:**

   a. Define the color differences in beef, veal, lamb, and pork.

   b. Explain the differences in size of beef, veal, lamb, and pork.

   c. Describe the differences in fatty tissue in beef, veal, lamb, and pork.

B. Review of Teaching Materials

The Meat We Eat, 11th Edition, The Interstate Printers and Publishers, Inc., 1977.

II. Presentation of Lesson

A. Content Outline

1. **Color Variations in Meats**

   a. Mature beef has a color range from bright cherry red to dark red.

   b. A vealer is identified as an immature bovine animal, usually not more than three months of age. The color of veal is usually a pinkish brown.

c. Pork meat has a greater range, being a grayish pink to a gray red in color.

d. The color of lamb is considered to be a light pink.

2. **Size Variations in Meats**

a. Cuts from the same area in beef, veal, pork, and lamb generally have a similar name and a similar structure.

b. The size of the cut can be used to identify the source of the meat. When comparing the rib cut from beef, veal, lamb, and hogs, the beef steak will be larger in size than the veal, lamb, and pork rib chop. The veal chop will be second in size, the pork chop will be third in size, and the lamb chop smallest in size. Similar comparisons can be made of other cuts.

3. **Variations in Fatty Tissue in Meats**

a. Beef fat may be yellowish in color because of consumption of green grasses and legumes. Grain fed beef is white, flaky, and hard.

b. Veal has a white colored fatty covering that is soft and pliable to the touch.

c. Lamb has a white colored fatty covering that is rather brittle. Usually the covering will not exceed 1/4 inch in depth.

d. Pork fat is also white and smooth to the touch. Soft fat that is greasy is considered to be from pork of poor quality.

LESSON 1 EXAMINATION

1. Give the meat color of the following:

   a. Beef

   b. Veal

   c. Lamb

   d. Pork

2. List in order, by size: lamb chop, pork chop, veal chop and rib steak.

3. Describe the fatty tissue, by texture and color, for the following:

   a. Beef

   b. Veal

   c. Lamb

   d. Pork

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT I: Meat Identification

LESSON 2: Identification of Retail Cuts by Bone Structure

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** Identify by bone structure the seven basic retail cuts of meat.

2. **Specific:**

a. Explain in writing the basic similarities of bone structure in beef, veal, pork, and lamb.

b. Identify from a diagram bones associated with seven basic retail cuts.

c. List 14 cuts of meat that derive their name from bone structure.

d. List and describe the seven basic retail cuts.

B. **Review of Teaching Materials**

1. Lessons on Meat, Agri-Farm Publications, Inc., 1982.

2. Lessons on Meat, 7th Edition, National Live Stock and Meat Board, 1980.

3. Meat Cut I.D. Slide Set, National Agricultural Education Curriculum Material.

4. The Meat We Eat, 11th Edition, The Interstate Printers and Publishers, Inc., 1977.

C. **Materials Required**

1. Slide projector

2. Screen

3. Overhead projector

4. Transparencies and slides

II. **Presentation of Lesson**

A. **Content Outline**

1. **Bone Structure Similarity in Beef, Veal and Lamb**

a. Bone structure in the four kinds of meat is almost identical. The only basic difference in the bone structure is bone size, with beef having the largest bone and lamb having the smallest bone.

b. Note the similarity in bone structure and placement (on TM1) of beef, veal, pork, and lamb. With very few exceptions, bones found in beef, veal, pork, and lamb carry the same name.

c. Since bone structure and name are relatively constant in beef, veal, pork, and lamb, their names are used in the name of many meat cuts.

d. Bones indicate the location of retail cuts and a clue to a cut's tenderness in beef, veal, pork, and lamb.

2. **Seven Bone Groups Identified with Basic Retail Cuts**

a. There are seven bones associated with the basic retail cuts. The seven bones are as follows: arm bone, blade bone (shoulder blade), back bone and rib bone, back bone or T-bone, hip bone (pin bone, flat bone, and wedge bone), leg or round bone, and breast and rib bone.

b. The bones are easily identified by their shapes and names. (See TM2 and TM3.) One can see that the arm bone and leg or round bone have a similar shape. The two bones can be easily identified, since the round bone is larger and more nearly round than the arm bone.

c. The blade bone and flat bone are easily separated since the blade bone (shoulder blade) is narrower and often shaped as a seven, while the flat bone (hip bone) is three to four times wider than the blade bone. (See TM2 and TM3.)

d. The back bone and rib bone are easily separated from the back bone (T-bone) since the protrusion from the back bone is near the middle, giving it a "T" shape. The protrusion of the back bone and rib bone is located at one end. (See TM2 and TM3.)

e. The location and bone shape can be better visualized when seen from a skeletal structure. (See TM4.)

f. From TM4 one can visualize the three shapes found in the shoulder blade and the three bone shapes found in the hip bone section. It can also be seen why the back bone is so called and where the back bone and rib bone, and breast and rib bone receive their names.

3. <u>Cuts of Meat That Receive Their Names from the Seven Basic Bone Structures</u>

*Slides may be used as a visual aid in identification of cuts.

a. Cuts Associated with the Arm Bone

(1) Beef and Veal—Arm steak, arm pot roast

Pork—Arm steak, arm roast, fresh picnic shoulder roast

Lamb—Arm chops

(2) All the cuts mentioned are easily identified by the known arm bone. The arm steak and arm pot roast are very similar, except for thickness, with the roast being thicker. In lamb there are no steaks; the arm bone cuts are called chops.

b. Cuts Associated with the Shoulder Blade

(1) Beef and Veal—blade steak, blade chuck roast, blade pot roast, 7-bone steak

Pork—Blade steak and Boston butt roast

Lamb--Blade chops and square shoulder roast

(2) All the cuts mentioned have the identifiable blade bone. Often these cuts will have a rib portion at their base.

c. Cuts Associated with the Back Bone and Rib Bone

(1) Beef—Rib steak and rib roast

Veal—Rib chop and rib roast

Pork—Rib chop and rib roast

Lamb—Rib chop and rib roast

(2) The rib cut in veal is called a chop rather than a steak. The common structure of the back bone and rib bone is seen in all mentioned cuts.

d. Cuts Associated with the Back Bone

(1) Beef—T-bone steak, porterhouse steak, and loin roast

Veal--Loin chops and loin roast

Pork—Loin chops and loin roast

Lamb--Loin chops and loin roast

(2) All cuts have the back bone with the protrusions near the center, giving the common "T" shape.

e. Cuts Associated with the Hip Bone

(1) Beef—Pin bone sirloin steak, flat bone sirloin steak, wedge bone sirloin steak, and sirloin roast

Veal—Pin bone sirloin steak, flat bone sirloin steak, wedge bone sirloin steak and sirloin roast

Pork—Sirloin chops and sirloin roast

Lamb—Sirloin chops and sirloin roast

(2) All the cuts have the common pin bone, flat bone or wedge bone to aid in identification.

f. Cuts Associated with the Leg or Round Bone

(1) Beef—Round steak, pot roast

Veal—Round steak, round roast, rump roast

Pork—Fresh ham butt portion, fresh ham shank portion

Lamb—Leg chop, center leg, sirloin half of leg, shank half of leg, French-style leg

(2) The known round bone is found in these cuts. A portion of the wedge bone may be seen in the cuts that are from the butt portion or sirloin area.

g. Cuts Associated with the Breast and Rib Bone

(1) Beef—Fresh brisket and short ribs

Veal—Breast and riblets

Pork—Spare ribs

Lamb—Breast spare ribs, riblets

(2) All cuts show the rib bone or breast bone and rib bone.

B. **Suggested Student Activities**

1. On their next trip to the supermarket, have the students write down the cuts of meat that are identified by the seven basic bone structures.

2. Take a field trip to a local processing plant and observe the cutting of the various cuts.

LESSON 2 EXAMINATION

1. List and explain three basic similarities in the bone structures of beef, veal, pork, and lamb.

   a.

   b.

   c.

2. Identify the bone structures on the attached diagram.

   *Note: Use the TM2 and TM3 diagram with the names omitted.

3. List 14 cuts for which names are derived from bone structures. Identify as to beef, pork, veal, or lamb.

	Name	Animal
A.		
B.		
C.		
D.		
E.		

F.

G.

H.

I.

J.

K.

L.

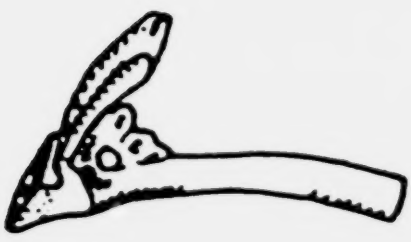
M.

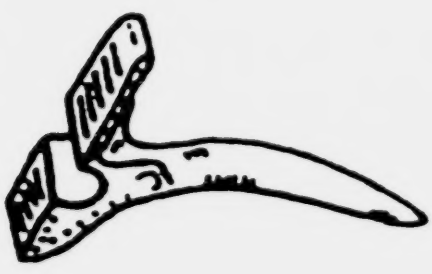
N.

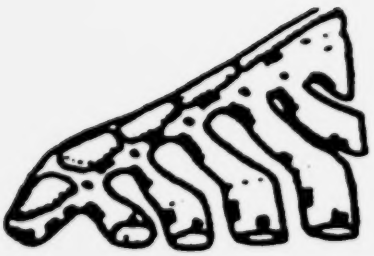
O.

4. List and describe seven retail cuts; indicate bone structure and shape.

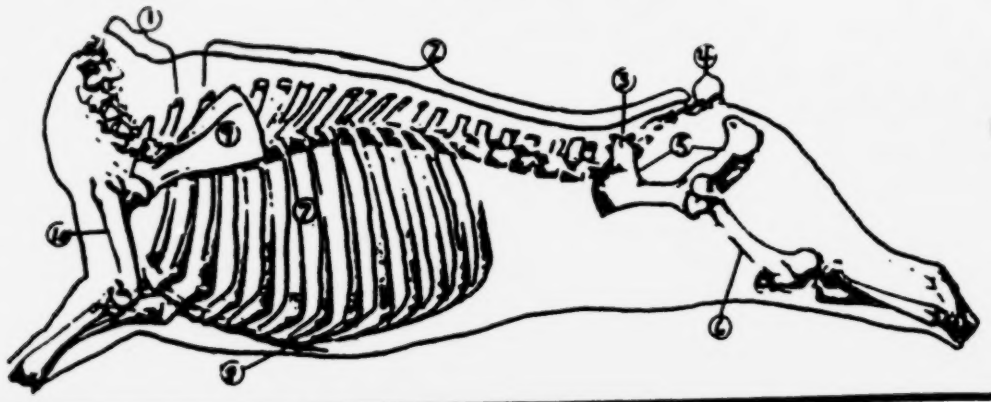
	Name	Bone Structure	Bone Shape
A.			
B.			
C.			
D.			
E.			
F.			
G.			



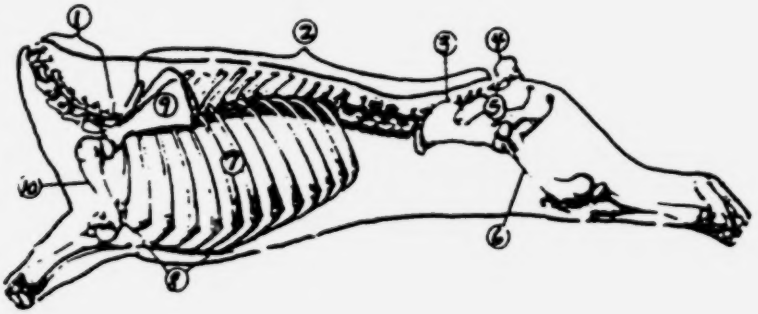




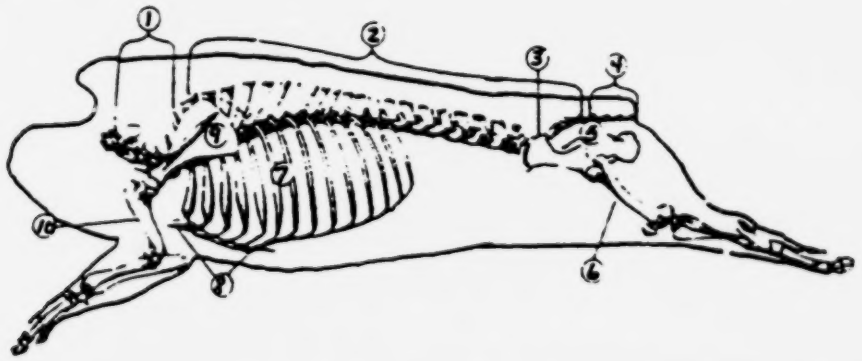
BONE STRUCTURE CHARTS



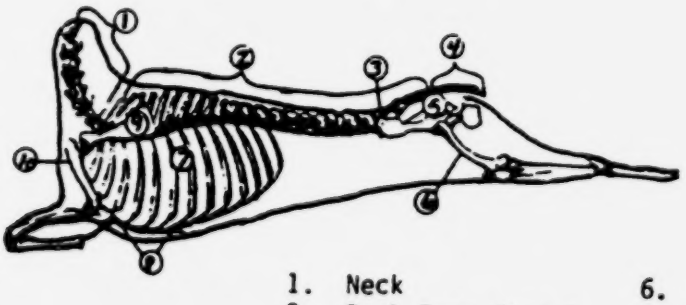
BEEF



VEAL



PORK



LAMB

1. Neck
2. Back Bone (Loin)
3. Pin Bone
4. Tail
5. Hip Bone
6. Leg Bone
7. Rib
8. Breast
9. Shoulder Blade
10. Arm Bone

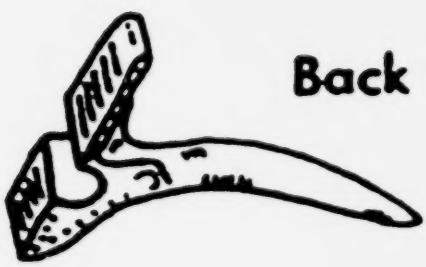
Arm Bone

Blade Bone
(near neck)

Blade Bone
(center cuts)

Blade Bone
(near rib)

Back Bone and Rib Bone



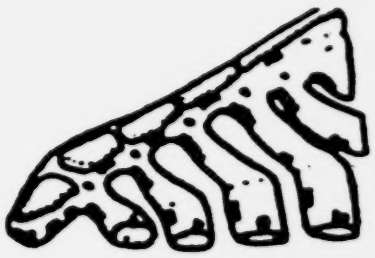
Back Bone (T-Shape) T-Bone

Pin Bone
(near short loin)

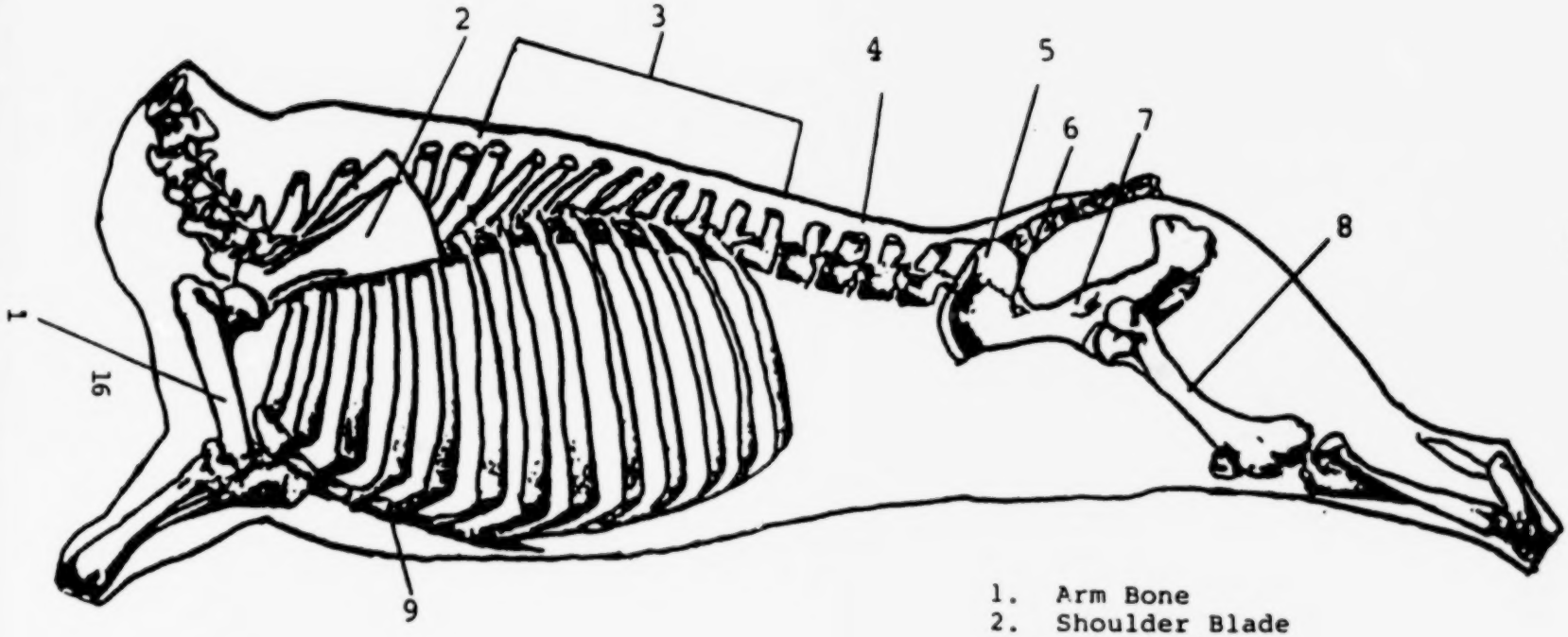
Flat Bone
(center cuts)

Wedge Bone
(near round)

Leg or Round Bone



Breast and Rib Bones



BEEF

1. Arm Bone
2. Shoulder Blade
3. Rib Section
4. Short Loin
5. Pin Bone)
6. Flat Bone) Hip Section
7. Wedge Bone)
8. Leg or Round Bone
9. Breast Bone

TM4

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT II: Buying Meat

Lessons: 1—Selecting Cuts and Determining Amounts to Buy

2—Proper Storage of Processed Meat

3—Cost of Meat

LESSON 1: Selecting Cuts and Determining Amounts to Buy

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** The ability to select high quality cuts of meat and estimate the amounts of meat needed.

2. **Specific:**

a. Explain the role of meat in providing a balanced diet.

b. List the forms in which meat is available to consumers.

c. Estimate the amount of meat required to serve a given number of people.

d. Identify the information from labels of retail packaged meat.

e. List and explain the quality factors associated with meat.

B. **Review of Teaching Materials**

1. Teaching about Meat Identification and Buying, National Live Stock and Meat Board

2. Meat Inspection and Grades, National Live Stock and Meat Board

3. Uniform Meat Identification Program, National Live Stock and Meat Board

4. Guides to Meat Buying, National Live Stock and Meat Board

5. Meat Identification and Buying, National Live Stock and Meat Board

6. Be a Smarter Shopper, National Live Stock and Meat Board

C. **Materials Required**

1. Overhead projector

2. Screen

3. Transparencies

II. **Presentation of Lesson**

A. **Content Outline**

1. **Meat as a Part of Family Meals**

a. A balanced diet is one that includes the kinds and amounts of food which will provide the needed quantities of essential nutrients and energy.

b. Composition of Meat

(1) Muscle tissue

(2) Connective tissue

(3) Fat

(4) Bone

2. **Available Forms of Meats**

Retail meat may be purchased in a variety of processed forms:

(1) Fresh

(2) Cured

(3) Cured and smoked

(4) Frozen

(5) Freeze-dried

(6) Canned

(7) Ready to serve

3. **Amounts of Meat to Buy**

a. Factors determining amount of meat to buy include the following:

(1) Appetites of family members (children--adults; male--female)

(2) Amount of lean meat in the cut

(3) Time available for preparation

(4) Planning more than one meal from a single cut of meat

(5) Storage facilities available

(6) Kinds of food to be served with the meat

Example: 12-ounce steak and baked potato per person versus one pound ground meat casserole with vegetables, serving four people.

b. Servings/pound of meat bought

(1) Boneless cuts = 1/4-1/3 lb./serving

(2) Bone-in cuts = 1/3-1/2 lb./serving

(3) Very bony = 3/4-1 lb./serving

(See TM1, "Servings/Pound to Expect from Specific Cuts")

4. **Determining Meat Quality**

Signs of good quality meat

(1) Federal Inspection Stamp - assures inspection by Federal Government Inspector.

(2) U.S.D.A. Inspection Stamp - assures that all ingredients were wholesome at the time of inspection.

(3) Appearance

(a) Conformation--general form, shape, or outline of the cut

(b) Quality--affects characteristics associated with palatability (tenderness, juiciness, flavor)

1) Maturity--Increased maturity sometimes means decreased tenderness.

2) Marbling--increases juiciness and flavor

3) Color--distinct for beef, lamb, pork, veal

4) Texture--firm texture, more tender

5) Firmness--if firm, indicates freshness

(c) Cutability--amount of usable meat in the cut

5. **Factors Considered by Packers in Bringing Meat to Consumers**

a. Goal of Packers--provide consumers with wholesome meat products at economical prices

b. Meat Inspection Stamp (TM2)

(1) All meat shipped out of state must be federally inspected.

(2) Tells location of packer by establishment number

c. U.S.D.A. Inspection Stamp

(1) Refers to wholesomeness of the meat

(a) Only from healthy animals

(b) Processed under sanitary conditions

(c) 80% of all meat in U.S. is federally inspected.

(d) 17%—state or city inspected

(e) 3%—no inspection

d. Uniform Meat Identification Program (TM3)

(1) Kind of meat—beef, veal, pork, lamb

(2) Wholesale name—primal cut

(3) Retail name—individual cut

(4) Net weight

(5) Cost/pound

(6) Cost of package

e. Ground meat labels (TM3)

(1) Ground beef--ground from only skeletal meat

(2) Lean-to-fat ratio—percent lean meat

(3) Net weight

(4) Price/pound

(5) Price of that package

B. **Suggested Student Activities**

1. Provide two cuts of meat and have students identify the higher quality cut and explain why.

2. Have students make a meat order for their individual families for specific cuts of meat. List factors of their family that aid in making the order.

Example:

Bacon - 3 meals - _____ lbs. needed
Pork chops - 1 meal - _____ lbs. needed
Boneless rump roast - 2 meals - _____ lbs. needed

Family:

Number of adults - _____
Number of brothers - _____ Ages ___ ___ ___
Number of sisters - _____ Ages ___ ___ ___

LESSON 1 EXAMINATION

1. Explain the meaning of a "balanced diet."

2. List seven forms of retail meat available to consumers.

   A.

   B.

   C.

   D.

   E.

   F.

   G.

3. List six factors to consider when determining how much meat to purchase.

   A.

   B.

   C.

   D.

   E.

   F.

4. List three appearance factors that are keys to meat quality.

   A.

   B.

   C.

5. Explain cutability of meat.

6. List the five items of information available from a Uniform Meat Identification package.

   A.

   B.

   C.

   D.

   E.

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT II: Buying Meat

LESSON 2: Proper Storage of Processed Meat

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** Upon completion of this lesson, the student should be able to identify proper methods of care and storage of meat.

2. **Specific:**

a. List shopping methods to prolong wholesomeness of meat products.

b. Explain the characteristics that improve the quality of frozen meats.

c. Be able to wrap cuts of meat to be frozen.

d. List the acceptable storage times of frozen meats.

B. **Review of Teaching Materials**

1. Care, Storage, and Freezing of Meat, National Live Stock and Meat Board

2. Be a Smarter Shopper, National Live Stock and Meat Board

3. Care of Meat and Poultry Products, National Live Stock and Meat Board

C. **Materials Required**

1. Overhead projector

2. Screen

3. Transparencies

II. **Presentation of Lesson**

A. **Content Outline**

Care of Purchased Meat

a. Meat may be safe to eat when purchased, but requires proper handling, sanitation, cooking, and storage to assure wholesomeness.

b. Meat is perishable and proper care is essential to maintaining its keeping qualities.

c. Shopping Tips

(1) Shop at clean, well-kept stores.

(2) When making several shopping stops, be sure to make perishable food purchases the last stop.

(3) Select refrigerated and frozen foods last at the grocery store.

(4) Be sure frozen foods are hard frozen.

(5) Be sure refrigerated foods are cold.

(6) Don't buy torn or damaged packages.

(7) Refrigerate or freeze perishable items as soon as you get home.

d. Storage in a Refrigerator

(1) Do not wash before storing in a refrigerator. Washing tends to dry surface of the meat.

(2) Store in original retail wrapper only one to two days.

(3) Keep in refrigerator no longer than one week.

e. Freezing Meat

(1) Prepare meats before freezing.

(a) Trim excess fat.

(b) Remove bones when practical.

(2) Freeze meat while it is fresh and in top quality.

(3) Freeze quickly and then stack packages tightly to conserve freezer space.

(4) Keep at 0°F. or below.

(5) Organize foods according to dates frozen (use oldest first).

(6) Do not store longer than recommended time (TM4).

f. Wrapping Meat for Storage

(1) Select proper wrapping material (seal air out; moisture in).

(2) Wrap meat tightly to force air out (TM-5).

(3) Label all packages properly.

(a) Name of cut

(b) Date frozen

(c) Weight or approximate number of servings

B. **Suggested Student Activities**

1. Using the proper wrapping materials, have students wrap pieces of wood as they would cuts of meat of similar size.

2. Have students properly label different cuts of meat when given needed information.

LESSON 2 EXAMINATION

1. List four steps that must be properly performed to assure meat is as wholesome when served as it was when bought.

   A.

   B.

   C.

   D.

2. Explain how following proper shopping methods can aid in the lasting qualities of frozen or refrigerated meats.

3. Why should meat be stored no longer than one week in a refrigerator?

4. Explain what steps should be taken before freezing meat.

5. List the information that should be used when labeling packages of frozen meat.

6. Give the recommended storage lengths of the following meats in a freezer and refrigerator (use TM4).

Cut	Refrigerator	Freezer
A. Fresh beef		
B. Fresh pork		
C. Ground beef		
D. Ground pork		
E. Leftover cooked meat		

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT II: Buying Meat

LESSON 3: Cost of Meat

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** Upon completion of this lesson, the student should be more aware of the actual cost and factors affecting the price of meat in the family food budget.

2. **Specific:**

a. Identify some of the factors that influence the price of meat.

b. Compare the cost of wholesale cuts to retail cuts of beef.

B. **Review of Teaching Materials**

1. Be a Smarter Shopper, National Live Stock and Meat Board

2. Guides to Meat Buying, National Live Stock and Meat Board

C. **Materials Required**

1. Screen

2. Transparencies

3. Overhead Projector

4. Charts

II. **Presentation of Lesson**

A. **Content Outline**

1. **New Look at Meat Costs**

a. The U.S. Department of Agriculture reveals that food costs in relation to income have been going down steadily during the past several decades.

b. Meat is an important foundation of nutritionally adequate meals.

c. Meat accounts for about one-fourth of the family food dollar.

d. Tender cuts are found on the part of the animal where muscles have received the least amount of use.

e. Less tender cuts are formed in areas where muscles receive more exercise.

f. Ground meat made tender by grinding can be prepared in the same manner as the most tender steaks.

g. Any cut of meat purchased can be made flavorful and tender by proper cooking.

2. **Prices Paid for Meat**

a. Price is not a good guide to quality, tenderness, or nutritive value.

b. Factors influencing meat prices

(1) Popularity of a cut

(2) Season of the year

(3) Amount of handling or processing required

(4) Kind of retail store

c. Things to consider when buying large amounts (one-half or one-fourth carcass) of meat

(1) Average price per pound

(2) More desirable cuts to less desirable cuts

(3) Trimming waste

(4) Cost of cutting and wrapping

(5) Storage costs and availability

B. **Suggested Student Activities**

Have students survey local retail meat stores to get information for the following chart.

a. Assign groups of students to prepare a chart together.

b. Assign different stores to different groups.

CHART 1

1. Compares the cost of buying one-half carcass of beef through a local processing plant to that of buying the same number of pounds of individual cuts at a retail store.

2. Wholesale price should be adjusted to the specific price for the dates of this study.

3. Retail prices were obtained by surveying local grocery stores.

4. Cost of cutting and wrapping must be added to the price of one-half carcass.

5. Wholesale cost of $1.09/pound.

6. Cost of cutting, wrapping, freezing = 14 cents/pound.

7. Different size carcasses will yield different amounts of retail cuts.

117 Lb. 1/2 Carcass	Individual Cuts	Retail Cost for Same Amount
7.0 lbs.	Sirloin Steak	7.0 lbs. @ $2.99 = $20.92
6.8 lbs.	T-bone Steak	6.8 lbs. @ $3.67 = $24.96
10.6 lbs.	Round Steak	10.6 lbs. @ $2.84 = $30.10
4.0 lbs.	Tip Roast	4.0 lbs. @ $2.96 = $11.84
12.0 lbs.	Butt Roast	12.0 lbs. @ $2.78 = $32.88
17.3 lbs.	Ground Meat	17.3 lbs. @ $1.99 = $34.43
17.0 lbs.	Rib Steak	17.0 lbs. @ $4.86 = $82.62
10.0 lbs.	Shoulder Steak	10.0 lbs. @ $2.13 = $21.30
7.6 lbs.	B-B-Q Ribs	7.6 lbs. @ $1.79 = $13.60
10.2 lbs.	Stew Meat	10.2 lbs. @ $1.79 = $18.26
6.2 lbs.	Chuck Roast	6.2 lbs. @ $1.39 = $ 8.62
17.3 lbs.	Waste (Fat, Bone)	None = $ 0.00
99.7 lbs. Edible Meat		Total Retail Cuts = $299.54
17.3 lbs. Waste		

99.7 lbs. @ 14 cents/lb.
cut, wrap, freeze $13.96

One-Half Carcass Cost
117 lbs. @ $1.09 = $127.53
99.7 lbs. @ .14 = $ 13.96

Total $141.49

Savings of Wholesale One-Half = $158.05

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LESSON 3 EXAMINATION

1. Fill in the following blanks:

   A. The U.S.D.A. says that food prices are _____ according to family income.

   B. _____ is an important part of nutritionally adequate meals.

   C. _____ accounts for about _____ of the family food dollar.

   D. _____ is the key to making meat flavorful and tender.

   E. _____ is not a good guide to quality, tenderness, or nutritive value.

2. Explain what determines if meat is naturally tender.

3. List four factors affecting meat prices.

   A.

   B.

   C.

   D.

4. List five factors to consider when buying large amounts of meat.

   A.

   B.

   C.

   D.

   E.

Servings Per Pound to Expect from a Specific Cut of Meat

The servings per pound are only a guide to the average amount to buy to provide 2½ to 3½ ounces of cooked lean meat. The cooking method and cooking temperature, the degree of doneness, the difference in the size of bone in the bone-in cuts and amount of fat trim are some of the factors that vary and will affect the yield of cooked lean meat.

BEEF

Steaks	
Chuck (Arm or Blade)	2
Cubed	4
Flank	3
Porterhouse	2
Rib	2
Rib Eye (Delmonico)	3
Round	3
Sirloin	2½
T-Bone	2
Tenderloin (Filet Mignon)	3
Top Loin	3
Roasts	
Rib	2
Rib Eye (Delmonico)	3
Rump, Boneless	3
Tip	3
Pot-Roasts	
Chuck (Arm)	2
Chuck (Blade)	2
Chuck, Boneless	2½
Cross Rib	2½
Other Cuts	
Beef for Stew	4
Brisket	3
Ground Beef	4
Short Ribs	2
Variety Meats	
Brains	5
Heart	5
Kidney	5
Liver	4
Sweetbreads	5
Tongue	5

PORK

Chops and Steaks	
Blade Chops or Steaks	3
Boneless Chops	4
Loin Chops	4
Rib Chops	4
Smoked (Rib or Loin) Chops	4
Smoked Ham (Center Slice)	5
Roasts	
Leg (Fresh Ham), Bone-in	3
Leg (Fresh Ham), Boneless	3½
Smoked Ham, Bone-in	3½
Smoked Ham, Boneless	5
Smoked Ham, Canned	5
Blade Shoulder (Rolled) Boneless (Smoked or Fresh)	3
Blade Loin	2
Top Loin (Rolled), Boneless (Smoked or Fresh)	3½
Center Loin	2½
Smoked Loin	3
Arm Picnic Shoulder (Bone-in) Fresh or Smoked	2
Sirloin	2
Smoked Shoulder Roll	3
Other Cuts	
Back Ribs	1½
Bacon (Regular), Sliced	6
Canadian-Style Bacon	5
Country-Style Back Ribs	1½
Cubes	4
Hocks (Fresh or Smoked)	1½
Pork Sausage	4
Spareribs	1½
Tenderloin (Whole)	4
Tenderloin (Fillets)	4
Variety Meats	
Brains	5
Heart	5
Kidney	5
Liver	4

LAMB

Chops and Steaks	
Leg Center Slice	4
Loin Chops	3
Rib Chops	3
Shoulder Chops	3
Sirloin Chops	3
Roasts	
Leg, Bone-in	3
Leg, Boneless	4
Shoulder, Bone-in	2½
Shoulder, Boneless	3
Other Cuts	
Breast	2
Riblets	2
Cubes, Lamb	4
Shanks	2
Variety Meats	
Heart	5
Kidney	5

INSPECTION STAMPS

The number on the stamp is assigned to only one slaughter plant.

MEAT PACKER INSPECTION STAMP

Examples of stamps for Choice quality grade and U.S. No. 1 yield grade beef carcasses.

U.S.D.A. INSPECTION STAMP

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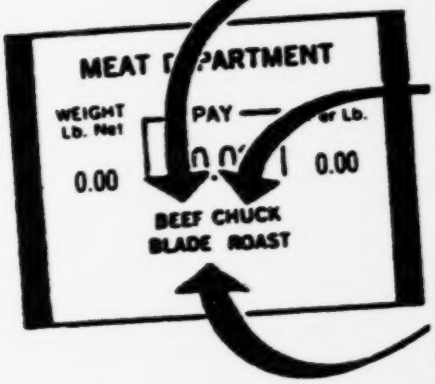
UNIFORM MEAT IDENTIFICATION PROGRAM

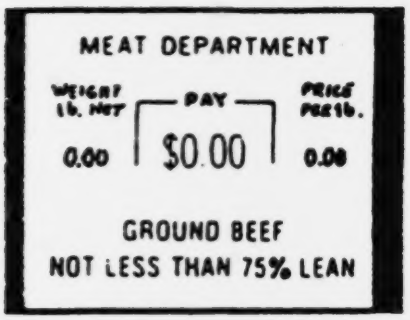


1 The kind of meat — BEEF, PORK, LAMB or VEAL. It's listed first on every label.

2 The primal (wholesale) cut —CHUCK, RIB, LOIN or ROUND —tells where the meat comes from on the animal.

3 The retail cut — BLADE ROAST, SPARERIBS, LOIN CHOPS, etc.—tells what part of the primal cut the meat comes from

GROUND MEAT LABEL



STORAGE TIME CHART

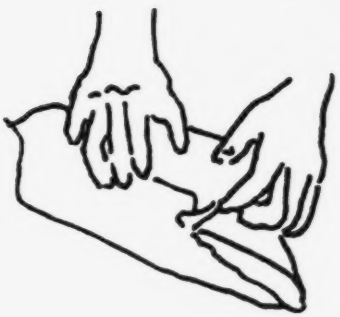
Maximum Storage Time Recommendations for Fresh, Cooked and Processed Meat

Meat	Refrigerator (38° to 40° F.)	Freezer (at 0° F. or lower)
Beef (fresh)	2 to 4 days	6 to 12 months
Veal (fresh)	2 to 4 days	6 to 9 months
Pork (fresh)	2 to 4 days	3 to 6 months
Lamb (fresh)	2 to 4 days	6 to 9 months
Ground beef, veal and lamb	1 to 2 days	3 to 4 months
Ground pork	1 to 2 days	1 to 3 months
Variety meats	1 to 2 days	3 to 4 months
Luncheon meats	1 week	not recommended
Sausage, fresh pork	1 week	60 days
Sausage, smoked	3 to 7 days	
Sausage, dry and semi-dry (unsliced)	2 to 3 weeks	
Frankfurters	4 to 5 days	
Bacon	5 to 7 days	
Smoked ham, whole	1 week	60 days
Ham slices	3 to 4 days	
Beef, corned	1 week	2 weeks
Leftover cooked meat	4 to 5 days	2 to 3 months
Frozen Combination Foods		
Meat pies (cooked)	--	3 months
Swiss steak (cooked)	--	3 months
Stews (cooked)	--	3 to 4 months
Prepared meat dinners	--	2 to 6 months

Wrapping

Place the meat near the center of the sheet. Bring edges of the sheet together over the meat.

Fold the sheet over once; then fold again so that the second fold is tight against the meat.



Make top folds evenly. Smooth the ends close to the meat and form into triangles.

Fold the ends under the package away from the top fold. Seal with freezer tape and label.

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT III: Nutrition (Nutritive Value of Meat)

Lessons: 1—Functions and Sources of Proteins in Meat

2—Functions and Sources of Vitamins in Meat

3—Functions and Sources of Minerals and Fats in Meat

LESSON 1: Functions and Sources of Proteins in Meats

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** To determine functions and sources of proteins in meat.

2. **Specific:**

a. Identify the importance and functions of protein to growth and life.

b. Identify the essential amino acids and meats high in each.

c. Identify the non-essential amino acids and meats high in each.

B. **Review of Teaching Materials**

The Meat We Eat, 11th Edition, The Interstate Printers and Publishers, Inc., 1977.

C. **Materials Needed**

1. Charts

2. Overhead Projector

II. **Presentation of Lesson**

A. **Content Outline**

1. **Importance of Proteins**

a. Protein is a necessary nutrient, essential to growth and life. Every living cell contains

protein, whether the cell is found in skin, muscle, blood, hair, heart, brains, nerves, or any other part of the body.

b. Proteins are made up of carbon, hydrogen, oxygen, nitrogen, and sulphur.

c. For effective utilization of plant protein, an animal protein should be included in the same meal.

d. All essential amino acids must be in the bloodstream at the same time for the body to take care of its job of tissue repair and growth.

2. **Functions of Proteins**

a. Build and maintain body tissue

b. Regulate the acid-base balance of the body

c. Help in the formation of body hormones and enzymes

d. Help build resistance to disease

3. **Amino Acids—Protein Building Blocks**

a. Proteins containing all of the essential amino acids are described as having a high biological value and are called complete proteins.

Animal foods with high quality protein are meat, poultry, fish, eggs, milk, and cheese.

b. Essential amino acids are those that must be taken into the body preformed, for our body cannot produce them.

(1) Identify nine essential amino acids and meats high in each (TM1, TM2).

(2) Identify two essential amino acids for infants and meats high in each (TM1, TM2).

(3) Identify seven nonessential amino acids and meats high in each (TM1, TM2).

B. **Suggested Student Activities**

Have students select foods for each meal containing most of the essential amino acids.

LESSON 1 EXAMINATION

1. Give the importance of proteins to a living body.

2. T or F — The human body can manufacture all proteins from the food eaten.

3. Proteins are made up of the elements:

   a. Carbon
   b. Hydrogen and oxygen
   c. Nitrogen and sulphur
   d. All of these

4. List the functions of proteins.

   a.

   b.

   c.

   d.

5. T or F — For efficient utilization of plant protein, an animal protein should be present in the same meal.

6. T or F — All essential amino acids must be in the bloodstream at the same time.

7. List nine essential amino acids and two sources of each.

8. List two essential amino acids necessary for infants and two sources of each.

9. List seven nonessential amino acids and two sources of each.

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT III: Nutrition (Nutritive Value of Meat)

LESSON 2: Functions and Sources of Vitamins in Meats

I. Preparation for Instruction

A. Student Objectives

1. **Terminal:** The student will be able to determine functions and sources of vitamins in meats.

2. **Specific:**

   a. Identify the vitamins available in meat that are essential in the diet of humans.

   b. Identify meats high in each vitamin.

B. Review of Teaching Materials

The Meat We Eat, 11th Edition, The Interstate Printers and Publishers, Inc., 1977.

C. Materials Required

Charts

II. Presentation of Lesson

A. Content Outline

1. **Vitamin A**

   a. Essential for proper growth and for the general maintenance and repair of body tissues.

   b. Fat-soluble vitamin important for:

      (1) Soft, smooth skin

      (2) Healthy mucous membranes of mouth, nose, and other body cavities

      (3) Formation of sound teeth

      (4) Helping maintain normal vision

c. Deficiency symptoms of Vitamin A:

(1) Retarded growth

(2) Night blindness

(3) Dry eyelids and reddened eyes

(4) Weakened respiratory system

(5) Increased susceptibility to infections

(6) Defective tooth formation

d. Meat sources of Vitamin A:

(1) Liver

(2) Meats are low in Vitamin A.

2. **Vitamin B**

a. Essential B Vitamins:

(1) Thiamin

(a) Essential in carbohydrate metabolism to help convert this nutrient into energy for the body

(b) Thiamin is water soluble and fairly stable to heat.

(c) Associated with a healthy nervous system

(d) Promotes good appetite

(e) Aids in digestion and assimilation of food

(f) Thiamin deficiency symptoms

1) Constipation
2) Poor muscle tone
3) Fatigue
4) Loss of appetite
5) Depression
6) Irritability

(g) Meat sources (Milligrams/3-1/2 ounces)

1) Pork is best source (1.03 milligrams)
2) Liver (.33 milligrams)
3) Lamb (.22 milligrams)
4) Beef (.10 milligrams)

(2) Riboflavin

(a) Combines with protein in the body to form a number of important oxidative enzymes. These enzymes are a vital link in the chain of oxidations involving carbohydrates, fatty acids, and amino acids.

(b) Water soluble and destroyed by long exposure to light. Stable to heat.

(c) Helps maintain healthy skin.

(d) Helps maintain good vision and healthy, clear eyes.

(e) Riboflavin deficiency symptoms

1) Reddened eyes which burn, itch and are over-sensitive to light
2) Cataract-like symptoms
3) Dimness of vision
4) Premature aging
5) Skin abnormalities
6) Inflamed tongue

(f) Meat sources (milligrams/3-1/2 ounces)

1) Liver is best (4.46 milligrams)
2) Beef (.39 milligrams)
3) Lamb (.32 milligrams)
4) Pork (.29 milligrams)

(3) Niacin

(a) Has a vital function in intracellular enzyme systems.

(b) Functions in body

1) Helps build and maintain healthy skin and tongue
2) Helps promote a healthy nervous system

(c) Niacin deficiency symptoms

1) Rough, inflamed skin
2) Mental depression
3) Nervousness
4) Pellagra

(d) Amino acid tryptophan is a precursor of niacin.

(e) Stable, resistant to heat, light, air, acids, and alkalies

(f) Meat sources (milligrams/3-1/2 ounces)

1) Liver (20.1 milligrams)
2) Lamb (7.6 milligrams)
3) Beef (4.5 milligrams)
4) Pork (4.4 milligrams)

(4) Pyridoxine (B_6)

(a) Function

Helps prevent and cure anemia, dermatitis, and nerve disorders

(b) Adult requirements: 2 milligrams per day

(c) Meat sources

1) Pork
2) Beef
3) Lamb
4) Variety cuts

(5) Pantothenic Acid

(a) Function

Vital in many metabolic processes in the body

(b) Adult requirements: five to ten milligrams daily.

(c) Meat sources

1) Liver
2) Beef
3) Pork tongue

(6) Folacin (Folic Acid)

(a) Function

1) Necessary for the formation of blood cells
2) Helps cure macrocytic anemia
3) Functions with certain amino acids and with ascorbic acid

(b) Adult requirements

.4 milligrams per day

(c) Meat sources

Liver

(7) Vitamin B_{12}

(a) Function

1) Helps prevent and treat pernicious anemia
2) May be related to growth

(b) Adult requirements

Three micrograms daily

(c) Meat Sources

1) Liver
2) Most meats

3. **Vitamin C**

a. Functions

(1) Helps maintain firm healthy gums

(2) Builds and maintains bones, tissues, and blood

(3) Helps make the cement that holds body cells together

(4) Helps the body resist infection

(5) Helps the body heal faster following wounds or fractures

(6) Helps body make firm blood vessel walls

b. Deficiency symptoms

(1) Weakened bones which may be deformed

(2) Tendency to bleed or bruise easily

(3) Swollen, painful joints

c. Meat sources

(1) Liver

(2) Meats are low in Vitamin C.

4. **Vitamin D**

a. Vitamin D is a fat-soluble vitamin.

b. Function

Aids in the metabolism of calcium and phosphorus for building bones and teeth

c. Deficiency symptoms

Rickets

d. Meat source

Liver

B. **Suggested Student Activities**

Have the students list the meat they eat during the week and vitamins furnished by the meat.

LESSON 2 EXAMINATION

1. Give the major functions of the following vitamins:

   A. Vitamin A

      1.

      2.

      3.

      4.

      5.

   B. Thiamin

      1.

      2.

      3.

      4.

   C. Riboflavin

      1.

      2.

      3.

   D. Niacin

      1.

      2.

      3.

   E. Pyridoxine (B_6)

      1.

   F. Pantothenic Acid

      1.

G. Folacin

1.

2.

H. Vitamin B_{12}

1.

2.

I. Vitamin C

1.

2.

3.

4.

5.

6.

J. Vitamin D

1.

2. List cuts of meat that contribute the following vitamins:

a. Vitamin A

1.

b. B vitamins most likely to be deficient in one's diet.

1.

2.

3. Meats are low in Vitamin _____ and _____.

4. Some vitamin D is in the _____.

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT III: Nutrition (Nutritive Value of Meat)

LESSON 3: Functions and Sources of Minerals and Fats in Meats

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** Enable the student to determine the need for minerals and fats in the human body and availability of each in meats.

2. **Specific:**

a. Identify the minerals needed in the human diet and functions of each.

b. Identify meats high in each mineral.

c. Identify the need for fats in human diets.

B. **Review of Teaching Materials**

The Meat We Eat, 11th Edition, The Interstate Printers and Publishers, Inc., 1977.

C. **Materials Required**

Charts

II. **Presentation of Lesson**

Content Outline

1. **Minerals**

a. Calcium (TM3)

(1) Most abundant mineral in the body

(2) Functions

(a) Responsible for formation of bones and teeth

(b) Essential for the functioning of the nervous system

(c) Essential for the working of muscles

(d) Essential for proper clotting of blood

(e) Essential for the action of certain enzymes

(f) Essential for the control of the passage of fluids through cell walls

(g) Helps regulate the action of the heart muscle

(3) Body needs

(a) Children aged 1 to 11 years: 800 milligrams daily

(b) Males aged 11-19 years: 1,200 milligrams daily
Males aged 19-51+ years: 800 milligrams daily

(c) Females aged 19 to 51+ years: 800 milligrams daily

(4) Meats do not supply calcium.

b. Phosphorus

(1) Functions

(a) Helps in proper formation of bones and teeth

(b) Essential for the working of muscles

(c) Essential for proper functioning of the nervous system

(d) Important in the metabolism of carbohydrates, proteins, and fats

(e) Helps blood and other body tissues maintain normal acid-base relationships

(2) Variety and other meats are among the best sources of phosphorus.

c. Iron

(1) Functions

Iron assists certain amino acids to build and maintain the red pigment of blood--hemoglobin--which carries oxygen throughout the body.

(2) Deficiency symptoms--anemia

(a) Paleness

(b) Listlessness

(c) Shortness of breath

(d) Lowered resistance to infection

(e) Fatigue

(3) Meat sources of iron

(a) Liver

(b) Red meat of beef, pork, lamb

d. Sodium and potassium

(1) Function

(a) Help with proper functioning of the nervous system and muscles

(b) Assist in control of body fluids

(2) Meat sources (TM3)

e. Magnesium

(1) Function

(a) Closely related to calcium and phosphorus

(2) Meat sources (TM3)

f. Copper

Function

(a) Useful in the formation of hemoglobin

(b) Believed to be involved in the oxidation of one amino acid and ascorbic acid

g. Trace minerals - Cobalt, manganese, zinc, and aluminum are also found in meats.

2. **Fats**

a. About 1/3 of the calories (see TM2) in this country come from fats. Some investigators recommend consuming less fat, with more energy needs being met by proteins and carbohydrates.

b. Fats are needed as a source of energy and supply fat-soluble vitamins A, D, E, and K.

c. Fats in the body protect vital organs and body tissues.

d. Fats help protect the body from loss of heat.

3. **Digestibility of Meats**

a. Meat from beef, veal, pork, and lamb is almost completely digested.

(1) Proteins from meat are at least 97% digested.

(2) Meat fat is at least 96% digested.

b. Fats tend to slow down the passage of food through the stomach, consequently slowing the rate of digestion. This prevents a feeling of hunger shortly after a meal.

c. So easily digested is meat that infants may have it introduced as early as six weeks (strained and added to formula).

d. The caloric and fat content of cooked meats is given in the following master (TM4).

LESSON 3 EXAMINATION

1. List five functions of phosphorus.

   a.

   b.

   c.

   d.

   e.

2. Give the meats that provide phosphorus.

   a.

   b.

3. Give the major function of iron.

4. List two meats that provide iron.

   a.

   b.

5. Give the major function of sodium and phosphorus.

6. List two meats that are sources of sodium and phosphorus.

   a.

   b.

7. Give the major function of magnesium.

8. List two meats that are important sources of magnesium.

   a.

   b.

9. Give the major function of copper.

10. Name a cut of meat that is a major source of copper.

11. List four trace elements found in meat.

    a.

    b.

    c.

    d.

12. Fats are needed as a source of _____.

13. Fats provide vitamins _____, _____, _____, and _____.

14. Fats in the body protect _____ _____.

15. Fats help protect the body from loss of _____.

16. Proteins from meat are _____ percent digested.

17. Meat fat is at least _____ percent digested.

18. Fats tend to slow down the passage of food through the _____.

Amino-acid Composition in Fresh Meats
(Schweigert and Payne, 1956)
(as % crude protein)

Amino acid	Category	Beef	Pork	Lamb
Isoleucine	Essential	5·1	4·9	4·8
Leucine	Essential	8·4	7·5	7·4
Lysine	Essential	8·4	7·8	7·6
Methionine	Essential	2·3	2·5	2·3
Cystine	Essential	1·4	1·3	1·3
Phenylalanine	Essential	4·0	4·1	3·9
Threonine	Essential	4·0	5·1	4·9
Tryptophan	Essential	1·1	1·4	1·3
Valine	Essential	5·7	5·0	5·0
Arginine	Essential for infants	6·6	6·4	6·9
Histidine	Essential for infants	2·9	3·2	2·7
Alanine	Non-essential	6·4	6·3	6·3
Aspartic acid	Non-essential	8·8	8·9	8·5
Glutamic acid	Non-essential	14·4	14·5	14·4
Glycine	Non-essential	7·1	6·1	6·7
Proline	Non-essential	5·4	4·6	4·8
Serine	Non-essential	3·8	4·0	3·9
Tyrosine	Non-essential	3·2	3·0	3·2

Amino Acid Content of Some Common Foods* (100 grams edible portion)

FOOD	Protein Content (%)	Tryptophan (gm)	Threonine (gm)	Isoleucine (gm)	Leucine (gm)	Lysine (gm)	Phenyl-alanine (gm)	Tyrosine (gm)
MEAT and MEAT PRODUCTS								
Beef cuts, medium fat								
Chuck	18.6	.217	.821	.973	1.524	1.625	.765	.631
Flank	19.9	.232	.879	1.041	1.630	1.738	.818	.675
Hamburger	16.0	.187	.707	.837	1.311	1.398	.658	.543
Round	19.5	.228	.861	1.020	1.597	1.704	.802	.661
Sirloin	17.3	.202	.764	.903	1.417	1.511	.711	.587
Lamb cuts, medium fat								
Rib	14.9	.193	.682	.772	1.154	1.206	.606	.517
Shoulder	15.6	.202	.714	.809	1.208	1.263	.634	.542
Pork cuts, medium fat								
Bacon, medium fat	9.1	.095	.306	.399	.728	.587	.434	.234
Ham, cured	16.9	.162	.692	.841	1.306	1.420	.646	.652
Loin	16.4	.213	.761	.842	1.207	1.346	.646	.585
Veal, shoulder, medium fat	19.4	.255	.841	1.024	1.422	1.620	.788	.698
Frankfurters	14.2	.120	.582	.688	1.018	1.143	.518	.461
Kidney, beef	15.0	.221	.665	.730	1.301	1.087	.706	.557
Liver, beef or pork	19.7	.296	.936	1.031	1.819	1.475	.993	.738

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Amino Acid Content of Some Common Foods* (100 grams edible portion) Continued

FOOD	Valine (gm)	Sulfur Containing: Methionine (gm)	Sulfur Containing: Cystine (gm)	Sulfur Containing: Total (gm)	Arginine (gm)	Histidine (gm)	Alanine (gm)	Aspartic Acid (gm)	Glutamic Acid (gm)	Glycine (gm)	Proline (gm)	Serine (gm)
MEAT and MEAT PRODUCTS												
Beef cuts, medium fat												
Chuck	1.033	.461	.235	.696	1.199	.646	1.074	1.735	2.815	1.152	.917	.780
Flank	1.105	.494	.252	.746	1.283	.691	1.149	1.856	3.012	1.232	.981	.834
Hamburger	.888	.397	.202	.599	1.032	.556	.924	1.492	2.422	.991	.788	.671
Round	1.083	.484	.246	.730	1.257	.677	1.126	1.819	2.952	1.207	.961	.817
Sirloin	.960	.429	.219	.648	1.116	.601	.999	1.614	2.619	1.071	.853	.725
Lamb cuts, medium fat												
Rib	.734	.358	.195	.553	.970	.415	.832	1.373	2.260	.870	.689	.596
Shoulder	.769	.374	.205	.579	1.016	.434	.871	1.438	2.366	.911	.721	.624
Pork cuts, medium fat												
Bacon, medium fat	.434	.141	.106	.247	.622	.246	—	.858	1.022	.858	.482	.352
Ham, cured	.879	.411	.273	.684	1.068	.544	—	1.517	2.390	1.114	.846	.695
Loin	.853	.409	.192	.601	1.005	.567	.761	1.553	2.509	.813	.724	.666
Veal, shoulder, medium fat	1.003	.444	.230	.674	1.263	.624	1.152	1.912	3.026	.928	.782	.854
Frankfurters	.713	.300	.177	.477	.986	.382	—	1.338	1.940	1.191	.809	.582
Kidney, beef	.876	.307	.182	.489	.934	.377	.912	1.538	1.958	.895	.775	.847
Liver, beef or pork	1.239	.463	.243	.706	1.201	.523	1.261	2.030	2.679	1.198	1.012	1.031

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MINERAL CONTENT OF COOKED MEAT*

(100 grams, lean plus marble with separable fat removed except where indicated)

Cut / Portion	Calcium (mg)	Phosphorus (mg)	Sodium (mg)	Potassium (mg)	Magnesium (mg)
BEEF					
Steak					
Round, bottom	12.7	228	44.6	484	24.8
Round, top	8.6	235	41.8	493	26.2
Sirloin	14.8	226	45.9	436	21.0
T-bone	10.7	181	51.6	398	19.8
Roast, Rib	7.5	164	53.6	413	18.6
Pot-roast, Rump	8.3	197	54.1	386	20.4
Other cuts					
Brisket, thick end	11.5	173	54.9	300	15.9
Ground beef[1]	7.3	220	47.4	430	21.3
Ground beef, extra lean[1]	16.1	271	47.5	558	26.2
Stew meat, round[1]	13.4	190	60.3	498	20.8
VEAL					
Chop, loin[2]	8.5	261	66.3	475	21.4
Steak, cutlet[2]	12.1	318	61.6	606	25.2
Roast					
Rump	9.1	247	74.3	509	20.6
Sirloin	9.1[3]	251	64.1[3]	580[3]	21.5
PORK					
Chop, loin[2]	12.1	263	59.6	568	23.3
Steak, leg (fresh ham)[2]	7.3	269	71.8	510	28.0
Roast					
Ham, cured (smoked) shank end	7.7	186	862.8	398	19.5
Sirloin, fresh	5.4[3]	262	55.0[3]	509[3]	23.8
Other cuts[1]					
Bacon, Canadian style	18.8	218	2,555	432	25.7
Bacon, regular sliced	15.6	231	1,077	241	24.7
Bacon, thick sliced	9.8	220	852	222	22.7
Sausage, link	18.8	162	958	333	17.0
LAMB					
Chop, loin	8.2[3]	214	82.9[3]	485[3]	24.1
Roast, leg	8.2[3]	215	84.9[3]	512[3]	23.6

[1]Entire portion, separable fat not removed [2]All lean

*Leverton and Odell, The Nutritive Value of Cooked Meat.

MINERAL CONTENT OF 100 GRAMS OF CURED AND PROCESSED MEATS*†

Meat	Calcium (mg)	Phosphorus (mg)	Iron (mg)	Sodium (mg)	Potassium (mg)
Bacon	13	108	0.8	680	130
Bologna	9	160	2.2	1,300	230
Corned beef	9	125	2.4	1,300	60
Dried beef	30	404	5.1	4,300	200
Frankfurters	9	164	2.3	1,100	140
Liver sausage	9	338	5.4	—	—
Pork sausage	6	116	1.6	740	430
Salt pork	2	42	0.6	1,800	27

*Schweigert and Payne, A Summary of the Nutrient Content of Meat.

†Analyses were on samples as purchased, without further cooking.

MINERAL CONTENT OF 100 GRAMS OF FRESH VARIETY MEATS*

Meat	Calcium (mg)	Phosphorus (mg)	Iron† (mg)	Sodium (mg)	Potassium (mg)
BEEF					
Brain	10	312	2.4	125	219
Heart	5	195	4.0	86	192
Kidney	11	219	7.4	176	225
Liver	8	252	6.5	136	301
Lung	—	216	8.4	—	—
Pancreas	—	270	2.9	—	—
Spleen	—	272	10.6	—	—
Thymus	14	393	2.1	96	360
Tongue	8	182	2.1	72	197
Tripe	127	86	1.6	72	9
VEAL					
Brain	10	312	2.4	125	219
Heart	3	160	3.0	94	200
Kidney	—	—	4.0	—	—
Liver	8	333	8.8	73	281
Lung	—	—	5.0	—	—
Pancreas	—	336	2.1	—	—
Spleen	—	272	10.6	—	—
Thymus (sweetbreads)	—	—	2.0	—	—
Tongue	—	—	3.1	—	—
Tripe	—	—	10.0	—	—
PORK					
Brain	10	312	2.4	125	219
Chitterlings	—	—	2.3	—	—
Heart	3	131	3.3	54	106
Kidney	11	218	6.7	115	178
Liver	10	356	19.2	73	261
Lung	—	—	18.9	—	—
Pancreas (sweetbreads)	11	282	1.0	44	317
Spleen	—	298	29.4	—	—
Tongue	29	186	1.4	—	—
LAMB					
Brain	10	312	2.4	125	219
Heart	11	249	—	—	—
Kidney	13	218	7.6	200	220
Liver	10	349	10.9	52	382
Lung	—	180	6.4	—	—
Pancreas	—	—	2.5	—	—
Spleen	—	—	60.1	—	—
Tongue	—	147	2.1	—	—
Tripe	—	—	2.4	—	—

*Bernice K. Watt and Annabel L. Merrill, Composition of Foods—Raw, Processed, Prepared (U. S. Department of Agriculture Handbook No. 8) Washington, D.C.: U. S. Government Printing Office, 1963).

Schweigert and Payne, A Summary of the Nutrient Content of Meat.

Sindler and others, Nutritional Quality of Variety Meats.

Kielanis and others, "Nutrient Content of Variety Meats," Food Technology.

†In general 70 per cent or more of the iron is retained in cooking, with liver retaining 90 to 100 per cent.

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CALORIE AND FAT CONTENT OF 100 GRAMS OF FRESH AND COOKED VARIETY MEATS*

Meat	Energy (Calories)						Fat (gm)	
	Fresh			Cooked†				
	From Protein	From Fat	Total	From Protein	From Fat	Total	Fresh	Cooked†
BEEF								
Brain	44	78	122	49	81	130	8.7	9.0
Heart	73	33	110	123	54	177	3.9	6.0
Kidney	73	27	100	105	33	138	3.0	3.6
Liver	88	43	131	98	39	137	4.7	4.3
Lung	71	30	101	87	33	120	3.3	3.7
Pancreas	73	133	206	116	155	271	14.8	17.2
Spleen	77	26	103	107	38	145	2.9	4.2
Thymus	56	190	246	88	224	312	21.1	24.9
Tongue	69	159	228	94	194	288	17.7	21.5
Tripe	58	60	118	—	—	—	6.6	—
VEAL								
Brain	44	61	105	45	66	111	6.8	7.4
Heart	73	36	109	112	41	153	4.0	4.5
Kidney	65	39	104	112	53	165	4.3	5.9
Liver	81	59	140	92	68	160	6.5	7.6
Lung	71	21	92	80	24	104	2.4	2.6
Pancreas	70	135	205	124	132	256	13.0	14.6
Spleen	79	20	99	102	23	125	2.2	2.6
Thymus (sweetbreads)	71	27	98	79	26	105	3.0	2.9
Tongue	77	56	133	113	75	187	6.2	8.3
Tripe	54	94	148	—	—	—	10.4	—
PORK								
Brain	49	76	125	53	78	130	8.5	8.7
Chitterlings	42	183	225	—	—	—	20.3	—
Heart	73	42	115	101	43	144	4.7	4.8
Kidney	71	29	100	108	43	151	3.2	4.7
Liver	89	40	129	92	43	135	4.4	4.7
Lung	62	21	83	71	28	99	2.3	3.1
Pancreas (sweetbreads)	87	98	185	121	98	219	10.9	10.8
Spleen	77	23	100	120	29	149	2.6	3.2
Tongue	71	151	222	103	167	270	16.7	18.6
LAMB								
Brain	47	72	119	54	83	137	8.0	9.2
Heart	74	51	125	93	47	140	5.7	5.2
Kidney	67	29	96	98	31	129	3.2	3.4
Liver	91	67	158	101	98	199	7.4	10.9
Lung	74	23	97	89	27	116	2.6	3.0
Pancreas	63	94	157	99	87	186	10.5	9.6
Spleen	77	25	102	116	34	150	2.8	3.8
Tongue	63	160	223	92	185	277	17.7	20.5
Tripe	65	60	125	—	—	—	6.6	—

*Kotschik and others, "Nutrient Content of Variety Meats," Food Technology.
Sindler and others, Nutritional Quality of Variety Meats.

†All separable fat removed before cooking.

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INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT IV: Meat Cookery

Lessons: 1—General Principles of Meat Cookery

2--Cooking Methods for the Tender Cuts of Meat

3--Cooking Methods for the Less Tender Cuts of Meat

Lesson 1: General Principles of Meat Cookery

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** Identify the combination of factors which work together to make meat palatable.

2. **Specific:**

a. Know the specific meaning of the term "palatability" as it has reference to meat.

b. List several qualities of cooked meat that affect palatability.

c. Explain in writing the importance of temperature control in meat cookery.

d. Identify the factors that must be considered when determining total cooking time of meat.

B. **Review of Teaching Material**

1. The Meat We Eat, 11th Edition, The Interstate Printers and Publishers, Inc., 1977.

2. Yellow Pages - Answers to Predictable Questions Consumers Ask About Meat, compiled by Consumer Affairs Committee of the American Meat Institute.

C. **Materials Required**

1. Chalk

2. Chalk Board

II. **Presentation of Lesson**

A. **Content Outline**

1. **Palatability and Meat Cookery**

a. Meat and meat products will be consumed in adequate and increasing quantities only if they appeal to and are accepted by the consumer on the basis of "palatability." Meat palatability is dependent upon such qualities as color, odor, flavor, juiciness, tenderness, and texture.

b. Palatability of cooked meat cannot be determined by sophisticated physical or chemical tests, but any dependable evaluation of the eating qualities of meat requires the all-important opinion of the consumer's palate.

c. Palatability is defined as being agreeable and pleasing in taste and appearance. The ultimate goal of everyone who cooks meat is to make it palatable.

2. **Qualities of Cooked Meat that Affect Palatability**

a. The attractive appearance and tastiness of cooked meat is dependent primarily on the following qualities:

(1) color

(2) flavor

(3) juiciness

(4) tenderness

b. Generally, personal preference plays a very important role in the desirous color of cooked meat. Color of cooked meat depends largely on the following:

(1) nature of animal

(2) age of animal

(3) length of cooking time

(4) intensity of heat during cooking

(5) method of cooking

c. Proper flavor of cooked meat is dependent upon an individual's preference, even though the meat industry has established consistent flavors for aged and unaged beef, veal, fresh and cured pork, lamb, etc. The nature and intensity of meat flavors depend in part on the following:

(1) method of cooking

(2) length of cooking time

(3) temperature of cooking

d. Juiciness of cooked meat is very closely associated with the tenderness of meat. The more tender the meat, the more quickly the juices are released by chewing and the more juicy the meat appears. The most important factor influencing juiciness of cooked meat is the cooking procedure. Juiciness is associated with the degree of marbling.

e. The most important palatabililty factor of cooked meat is tenderness. Many factors affect the tenderness of meat. These factors include the following:

(1) genetics

(2) feeding practices

(3) length of storage after slaughter

(4) temperature of storage

(5) methods of cutting

(6) methods of cooking

(7) addition of tenderizing agents

Additionally, tenderness varies from muscle bundle to muscle bundle; therefore, the cut of meat is largely responsible for tenderness.

3. **The Importance of Correct Temperature**

a. Heat during the cooking process decreases the size and the weight of the cut of meat. This process is called "shrinkage." This results in the loss of water, fat, vitamins, and other substances. These cooking losses are important because they affect the appearance and the palatability of the meat.

b. Factors which affect cooking losses are as follows:

(1) Temperature. The higher the cooking temperature, the greater the shrinkage. Research has shown that low to moderate cooking temperature saves meat.

(2) Degree of doneness. The higher the internal temperature of the meat, the greater the shrinkage. Pork must be cooked well done, but pork roasts become dry and shrink severely when overcooked.

c. When meat is cooked at proper temperature and to the correct degree of doneness, it is juicy, flavorful, easier to carve, and much more economical.

4. **Factors to Consider When Determining Total Cooking Time**

a. There are four factors that must be considered in determining the cooking time of meat:

(1) the cooking temperature

(2) the size and shape of the cut

(3) the amount of aging

(4) the degree of doneness desired

b. The total cooking time of meat is only an approximate guide to degree of doneness. Personal preference plays an important role.

B. **Suggested Student Activities**

1. For a few days, have the students note the "palatabililty" of meat eaten at home. Discuss findings in class.

2. Have students visit a local restaurant to discuss their plans for serving attractive and appetizing meat dishes.

LESSON 1 EXAMINATION

1. Define the term "palatability" as it refers to meat cookery.

2. Name four factors that determine the palatability of cooked meat.

   a.

   b.

   c.

   d.

3. Briefly explain "shrinkage" as it relates to meat cookery.

4. List two ways shrinkage in meat cookery can be controlled.

   a.

   b.

5. What is the advantage of cooking meat at the proper temperature and to the correct degree of doneness?

6. List seven factors that may affect the tenderness of meat.

   a.

   b.

   c.

   d.

   e.

   f.

   g.

7. List the four factors to consider when determining the proper cooking time of meat.

a.

b.

c.

d.

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT IV: Meat Cookery

Lesson 2: Cooking Methods for the Tender Cuts of Meat

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** Explain the procedure for cooking meat with dry heat.

2. **Specific:**

a. Identify the cuts of meat suitable for dry heat cookery.

b. Explain in writing the use of dry heat in cooking.

c. Explain in writing three methods of dry heat cookery.

B. **Review of Teaching Material**

1. The Meat We Eat, 11th Edition, The Interstate Printers and Publishers, Inc., 1977.

2. Yellow Pages--Answers to Predictable Questions Consumers Ask About Meat, compiled by Consumer Affair Committee of the American Meat Institute.

C. **Materials Required**

1. Overhead projector

2. Screen

3. Transparencies

II. **Presentation of Lesson**

A. **Content Outline**

1. **Cuts of Meat Suitable for Dry Heat Cookery**

a. The cuts suitable for dry heat cookery are easily identified when associated with the

respective wholesale cuts. Generally, the dry heat cuts are those retail cuts which have long skeletal muscles with a high degree of marbling and fat content with little or no connective tissue.

b. Cuts of Pork Suitable for Dry Heat Methods (TM1)

Wholesale	Retail
Ham	Fresh ham rump
	Fresh ham shank
	Fresh ham boneless
	Fresh ham center slice
	Smoke ham rump
	Smoke ham shank
	Smoke ham center cut
Loin	Loin roasts
	Loin chops
	Tenderloin
	Smoke loin chops
Side (belly)	Bacon
	Spare ribs

c. Cuts of Beef Suitable for Dry Heat Method (TM2)

Wholesale	Retail
Rump	Roasts
Sirloin	Sirloin steak
Shortloin	Porterhouse steak
	T-Bone steak
	Top loin steak
	Tenderloin steak
Rib	Rib roast
	Rib steak
	Rib-eye roast
	Rib-eye steak
Short Plate	Short ribs

d. Cuts of Lamb Suitable for Dry Heat Method (TM3)

Wholesale	Retail
Leg	Leg of lamb
	Center slice
	Sirloin chops
Loin	Loin roast
	Loin chops

Rib (rack)	Rib roast Rib chops
Shoulder	Square cut shoulder Arm chops Blade chops

e. Cuts of Veal Suitable for Dry Heat Method (TM4)

(Veal has very little fat; therefore, dry heat cookery is not generally recommended. However, the following cuts may be cooked successfully using the dry heat method.)

Wholesale	Retail
Leg	Rump roast Cutlets Center cut roast
Loin	Chops
Rib	Rib roast Rib chops

2. **Use of Dry Heat in Cooking**

a. Dry heat cookery is a fundamental method of cooking meat by surrounding the cut by dry air in the oven, under the broiler, over charcoal, etc.

b. Dry heat cookery is more adaptable to the tender cuts of meat. Meat with little to no connective tissue is generally suitable for dry heat cookery.

3. **Methods of Dry Heat Cookery**

a. There are basically three methods of dry heat cookery:

(1) roasting
(2) broiling
(3) pan-broiling

b. Roasting--This method is accomplished by placing the cut on a rack in an open roasting pan with fat side up. No water is added. No lid is used to cover the roast. Roasting is done at slow temperature of 300° F. until a

desired degree of doneness. Fresh pork is roasted at an oven temperature of 325° F. until well done.

c. Broiling--This method consists of a direct exposure of the meat to heat. Examples of broiling include outdoor charcoaling, and broiling from both sides as in vertical grills with heat on both sides.

d. Pan-broiling--This method is very suitable for steaks and chops one inch thick or less. The meat is placed in a heavy iron skillet or on a heavy griddle and is browned on both sides. After browning, the temperature is lowered and the cuts are turned occasionally until done. No fat is allowed to accumulate.

e. Pan-frying is similar to pan-broiling except that fat is added to the pan while cooking. Usually relatively thin pieces of tender meat may successfully be pan-fried.

B. **Suggested Student Activities**

1. Encourage students to use one or all methods of dry heat cookery at home. Report to class on results of home cookery.

2. Ask students to shop with their parents at supermarkets for cuts of meat suitable for dry heat cooking. Report to class.

LESSON 2 EXAMINATION

1. Name seven retail cuts of meat which are suitable for dry heat cookery from the following:

Pork	Beef	Lamb
a.	a.	a.
b.	b.	b.
c.	c.	c.
d.	d.	d.
e.	e.	e.
f.	f.	f.
g.	g.	g.

2. Why is dry heat cookery more adaptable to the tender cuts of meat?

3. List the three basic methods of dry heat cookery. Explain the basis of each method.

   a.

   b.

   c.

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT: Meat Cookery

Lesson 3: Cooking Methods for the Less Tender Cuts of Meat

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** Explain the procedure for cooking meat with moist heat.

2. **Specific:**

a. Identify the cuts of meat suitable for moist heat cookery.

b. Explain in writing the moist heat method of cooking meat.

c. Explain in writing the two basic methods of cooking with moist heat.

B. **Review of Teaching Material**

1. The Meat We Eat, 11th Edition, The Interstate Printers and Publishers, Inc., 1977.

2. Yellow Pages - Answers to Predictable Questions Consumers Ask About Meat, compiled by Consumer Affairs Committee of the American Meat Institute.

C. **Materials Required**

1. Overhead projector

2. Screen

3. Transparencies

II. **Presentation of Lesson**

A. **Content Outline**

1. **Cuts of Meat Suitable for Moist Heat Cookery**

a. The cuts of meat suitable for moist heat cookery are generally the less tender cuts.

These are cuts with considerable amounts of connective tissue or cuts that have short curved muscle bundles. However, in consideration of personal preference, some of the more tender cuts are cooked in moist heat.

b. Cuts of pork recommended to be cooked in moist heat (TM1)

(1) Chops

(2) Blade steaks

(3) Arm steak

(4) Shoulder roast

(5) Ham--shank portion

(6) Salt side of pork

(7) Pork hocks

(8) Fresh pig's feet

(9) Any other cut considered by the individual to be less tender

c. Cuts of beef recommended to be cooked in moist heat (TM2)

(1) Round steak

(2) Short ribs and plate meat

(3) Heel of round

(4) Flank

(5) Brisket

(6) Chuck pot roast

(7) Shank

(8) Chuck steak

(9) Corned beef

(10) Beef for stew

(11) Any other cut considered by the individual to be less tender

d. Cuts of lamb recommended to be cooked in moist heat (TM3)

(1) Breast

(2) Riblets

(3) Shoulder chops

(4) Shank

(5) Neck slices

(6) Lamb for stew

(7) Any other cut considered by the individual to be less tender

e. Cuts of veal recommended to be cooked in moist heat (TM4)

(1) Breast

(2) Riblets

(3) Cutlets

(4) Shoulder chops and cubes

(5) Shoulder roasts

(6) Heel of round

(7) Shank

(8) Veal for stew

(9) Any other cut considered by the individual to be less tender

2. <u>Using the Moist Heat Method of Cooking Meat</u>

a. Cuts of meat that are less tender must have moisture added for cooking. The steam or liquid of moist heat softens the meat's connective tissue and makes the product tender.

b. The moist heat methods of cooking are as follows:

(1) braising

(2) cooking in liquid

c. Using moist heat to cook meat results in the loss of some flavor and nutrients to the liquid. Therefore, meats should be browned on all sides to enhance flavor. Using drippings for gravy or sauce compensates for much of the loss of flavor and nutrients.

3. **Methods of Meat Cookery Using Moist Heat**

a. There are basically two methods of moist heat cookery. They are braising and cooking in liquid.

b. Braising simply involves the browning of meat cut on all sides in a heavy utensil, adding seasoning and a small amount of liquid, covering tightly, and cooking at low temperature until tender. Braising is done either on top of the range or in the oven.

c. Cooking in liquid method involves the browning of the cut in its own fat or juices, then adding hot liquid. The meat is allowed to cook at a simmering temperature until tender. Stews and soups call for the cooking in liquid method.

B. **Suggested Student Activities**

1. Solicit recipes from students using the moist heat method of cooking meat for soup, stew, or other dishes. Examine recipes and cuts of meat used; determine if more or less tender cuts are used.

LESSON 3 EXAMINATION

1. Name seven retail cuts of meat recommended to be cooked in moist heat from the following:

Pork	Veal	Beef	Lamb
a.	a.	a.	a.
b.	b.	b.	b.
c.	c.	c.	c.
d.	d.	d.	d.
e.	e.	e.	e.
f.	f.	f.	f.
g.	g.	g.	g.

2. List the two basic methods of cooking meat with moist heat. Explain each method.

   a.

   b.

3. How does cooking with moist heat make less tender cuts of meat more tender?

CUTS OF PORK

National Live Stock and Meat Board

BEST COPY AVAILABLE

CUTS OF BEEF

*Prime and choice grades may be broiled, panbroiled or sautéed

National Live Stock and Meat Board

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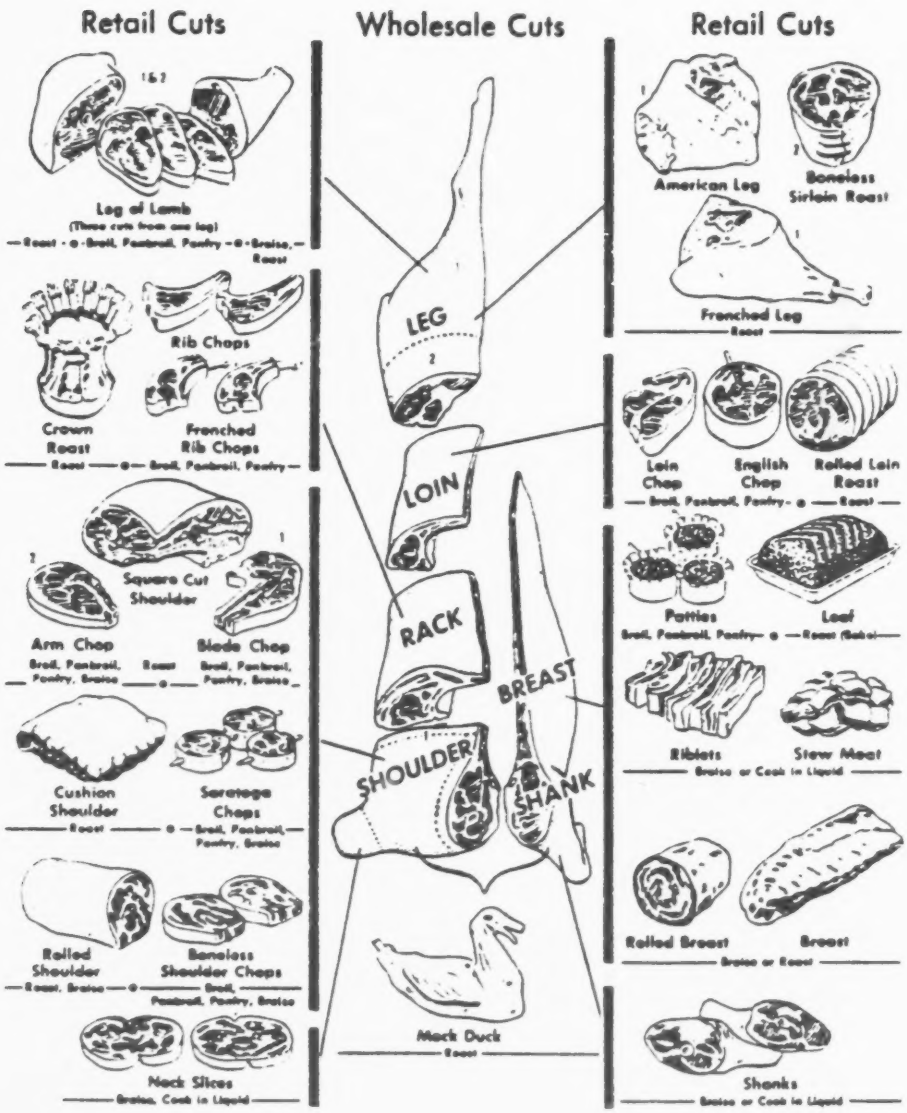
CUTS OF LAMB



National Live Stock and Meat Board

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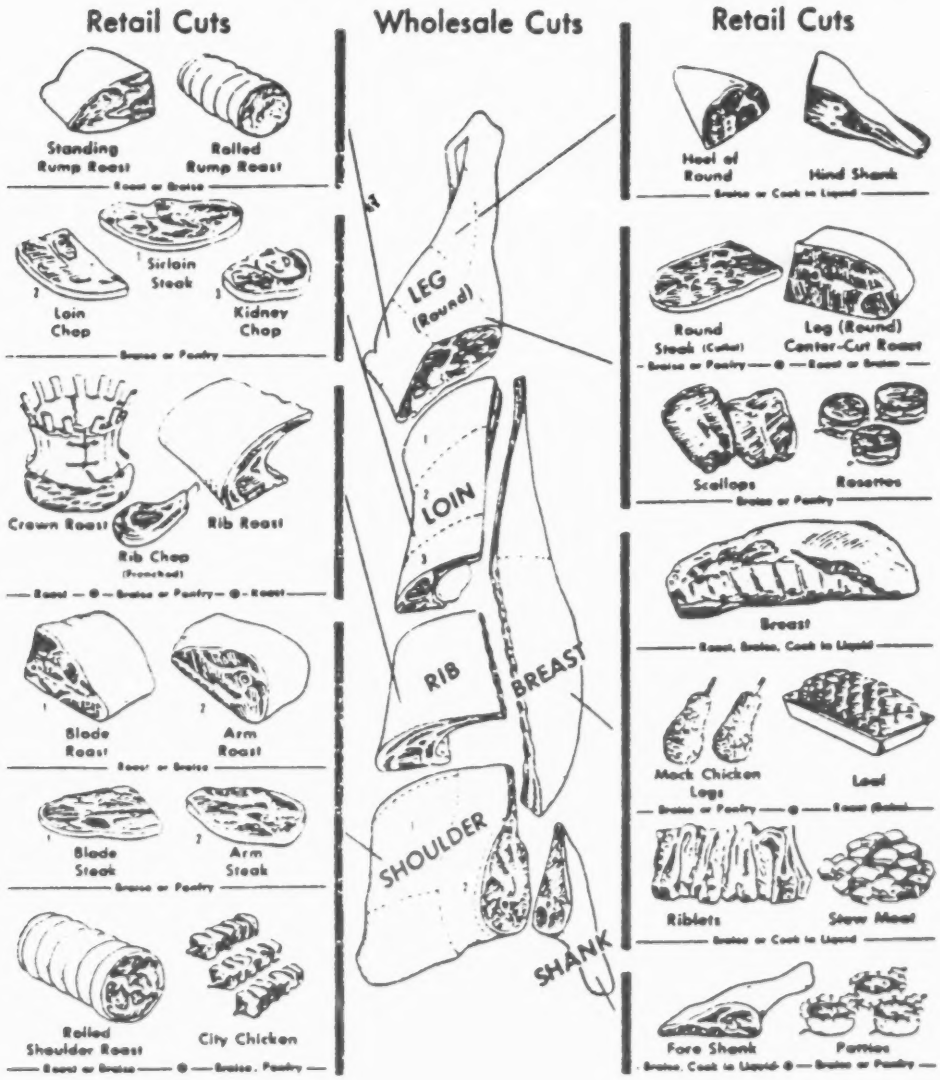
CUTS OF VEAL



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INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT V: Meat Processing

Lessons: 1—Cutting Wholesale and Retail Beef Cuts

2—Cutting Wholesale and Retail Pork Cuts

3—Cutting Chickens

4—Curing and Smoking of Meat

Lesson 1: Cutting Wholesale and Retail Beef Cuts

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** Describe and demonstrate how to divide a beef side into the wholesale and retail cuts.

2. **Specific:**

a. Identify wholesale beef cuts.

b. Identify retail beef cuts.

c. Break beef carcass into wholesale cuts.

d. Break beef carcass into retail cuts.

B. **Review of Teaching Materials**

1. The Meat We Eat, 11th Edition, The Interstate Printers and Publishers, Inc., 1977.

2. Lessons on Meat, 10th Edition, National Live Stock and Meat Board, 1980.

3. Meatcutter, Instructional Materials Services, Division of Extension, University of Texas.

C. **Materials Required**

1. Meat processing center

2. Overhead projector

3. Transparencies

4. Beef carcasses

5. Meat cutting saws

6. Meat cutting hand tools; knives, saws, sharpening tools, etc.

7. Hard hats, aprons, etc.

II. **Presentation of Lesson**

A. **Content Outline**

1. **Identify Wholesale Beef Cuts**

a. Recognize the bone structure of beef side carcasses and the wholesale cuts.

b. Recognize the muscle structure of beef side carcasses and the wholesale cuts.

2. **Cut Beef Side Carcasses into Wholesale Meat Cuts** (See TM8.)

a. Cut beef side into hindquarter and forequarter (TM1 and TM5).

(1) Count twelve ribs and leave one rib on the hindquarter.

(2) Separate quarters with knife and hand meat saw.

b. Separate the chuck from the rib, brisket, and shank (TM2).

(1) Count five ribs for determining initial cuts from neck.

(2) Separate the chuck from the brisket and shank.

c. Separate shank and brisket by finding the indentation on the arm bone and removing the parts (TM2).

d. Locate and make a cut for removing the short plate from the rib and flank (TM2).

e. Cut the flank from the sirloin tip to the thirteenth rib (TM2).

f. Separate the round and sirloin.

(1) Find the area for cutting the angle.

(2) Score with a knife.

(3) Saw the bone with a meat saw

g. Remove the rump from the round

(1) Mark and cut the muscle.

(2) Saw the bone with a meat saw and remove the rump.

3. **Identify Retail Cuts of Beef** (TM3, TM4, TM8)

a. Recognize the bone structure of the wholesale and retail cuts.

b. Recognize muscle structure of the wholesale and retail cuts.

4. **Cut Retail Cuts from Wholesale Cuts**

a. Cut retail cuts from the chuck.

(1) Inside chuck roll

(2) Chuck tender

(3) Blade pot roast and steaks

(4) Boneless shoulder pot roast and steaks

(5) Petite steak

(6) Arm pot roast and steak

(7) English (Boston) cut

(8) Parts for ground beef

b. Cut retail cuts from the shank.

(1) Shank cross cut

(2) Beef stew

(3) Parts for ground beef

c. Cut retail cuts from the brisket.

(1) Fresh brisket

(2) Corned brisket

(3) Parts for ground beef

d. Cut retail cuts from the rib.

(1) Standing rib roast

(2) Rib steak

(3) Rib steak (boneless)

(4) Delmonico (rib eye) roasts and steaks

(5) Parts for ground beef

e. Cut retail cuts from the short plate.

(1) Short ribs

(2) Short steak fillets

(3) Rolled plate

(4) Plate beef

(5) Parts for ground beef

f. Cut retail cuts from the short loin.

(1) Club steaks

(2) T-bone steaks

(3) Porterhouse steaks

(4) Top loin steaks

(5) Filet mignon

(6) Tenderloin steaks

(7) Parts for ground beef

g. Cut retail cuts from the flank.

(1) Flank steak

(2) Flank steak fillets

(3) Rolled flank

(4) Flank meat

(5) Parts for ground beef

h. Cut retail cuts from the sirloin.

(1) Pin bone sirloin steak

(2) Flat bone sirloin steak

(3) Wedge bone sirloin steak

(4) Boneless sirloin steak

(5) Tip steak

(6) Cube steak

(7) Sirloin tips

i. Cut retail cuts from the rump.

(1) Tip steaks

(2) Sirloin tip

(3) Cube steak

(4) Rolled rump

(5) Standing rump

j. Cut retail cuts from the round.

(1) Heel of round

(2) Top of round steak

(3) Bottom round steak

(4) Round steak

(5) Eye of round

(6) Parts for ground beef

B. **Suggested Student Activities**

1. Have each student cut one of the wholesale cuts from a side of beef.

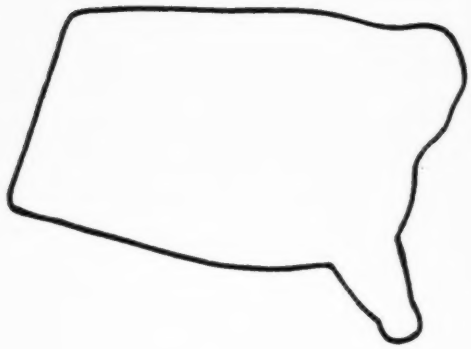
2. Have each student cut one of the wholesale cuts into retail cuts.

3. Have students evaluate one another on tool selection and cutting accuracy.

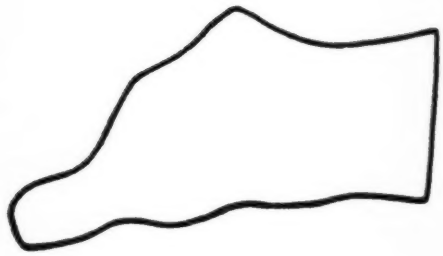
LESSON EXAMINATION

CUTTING BEEF

1. Show where the primal cuts of a forequarter are made by drawing the proper lines in the illustration below; write in the names of the cuts.

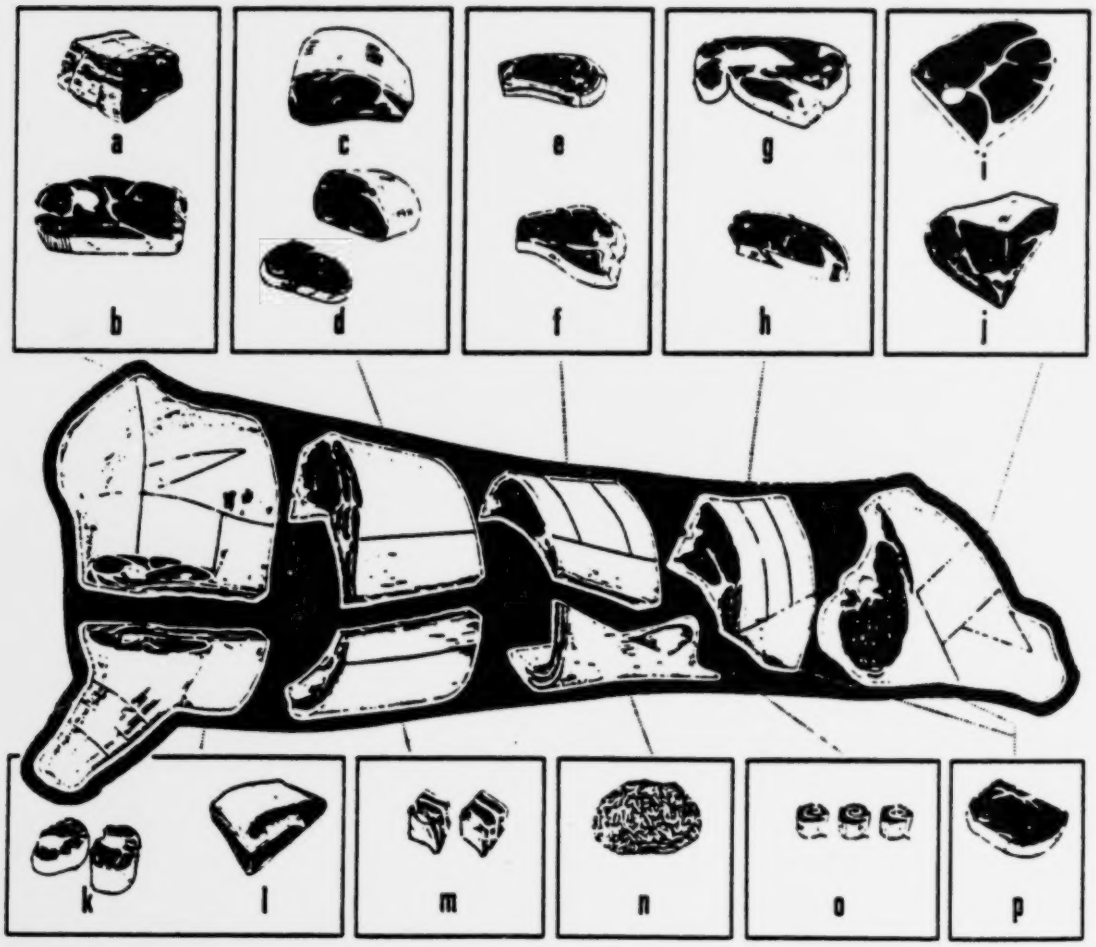


2. Show where the primal cuts of a hindquarter are made by drawing the proper lines in the illustration below; write in the names of the cuts.



4. Identify the retail cuts of beef shown in the illustration. Write the names of the cuts in the corresponding blanks provided.

a. _____
b. _____
c. _____
d. _____
e. _____
f. _____
g. _____
h. _____
i. _____
j. _____
k. _____
l. _____
m. _____
n. _____
o. _____
p. _____



INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT V: Meat Processing

Lesson 2: Cutting Wholesale and Retail Pork Cuts

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** Describe and demonstrate the steps used in breaking a pork carcass into wholesale and retail cuts.

2. **Specific:**

a. Orally identify wholesale cuts.

b. Orally identify retail cuts.

c. Break pork carcass into wholesale cuts.

d. Break wholesale pork cuts into retail cuts.

B. **Review of Teaching Materials**

1. The Meat We Eat, 11th Edition, The Interstate Publishers and Printers, Inc., 1977.

2. Lessons on Meat, 7th Edition, National Live Stock and Meat Board, 1980.

C. **Materials Required**

1. Overhead projector

2. Transparencies

3. Pork carcasses

4. Meat cutting saws

5. Meat cutting hand tools: butcher knives, boning knives, hand meat saw, sharpening stone, sharpening steel

6. Hard hats, aprons

II. **Presentation of Lesson**

A. **Content Outline**

1. **Recognize the bone structure of a pork side carcass and the wholesale cuts.**

2. **Recognize the muscle structure of a pork side carcass and the wholesale cuts.**

3. **Cut a pork side carcass into wholesale meat cuts** (see TM9).

a. Locate correct forefoot bone and cut off forefoot from picnic.

b. Cut pork heads.

(1) Locate and remove to jowl.

(2) Remove eyes.

(3) Locate and remove ear canal.

(4) Remove snout.

c. Cut pork shoulder, leaving three ribs.

d. Separate the picnic from the shoulder.

e. Separate the ham from the loin.

(1) Remove the kidney.

(2) Remove the leaf lard.

(3) Pull loose the curing vein.

(4) Cut the ham from the loin.

f. Cut the pork belly.

(1) Separate the belly from the loin.

(2) Cut and lift the ribs out.

g. Cut the hind foot from the ham.

4. **Identify pork retail meat cuts.**

a. Recognize the bone structure of the wholesale and retail meat cuts.

b. Recognize the muscle structure of the wholesale and retail cuts.

5. **Cut pork retail cuts from various wholesale cuts** (see TM10).

a. Cut the retail cuts from the Boston butt.

(1) Boston butt

(2) Blade steak

(3) Rolled Boston butt

(4) Shoulder butt

(5) Pieces of meat for sausage

(6) Lard

b. Cut retail cuts from the picnic.

(1) Fresh picnic

(2) Rolled fresh picnic

(3) Arm roasts and steaks

(4) Fresh hock

c. Cut retail cuts from the belly.

(1) Bacon

(2) Spareribs

d. Cut retail cuts from the loin.

(1) Blade loin roasts and steaks

(2) Country style back bone

(3) Back rib

(4) Center loin roasts and chops

(5) Rib chops

(6) Butterfly chops

(7) Rolled loin roasts

(8) Sirloin roasts and chops

(9) Tenderloin

(10) Canadian style bacon

e. Cut retail cuts from the leg.

(1) Sirloin tip roast

(2) Boneless rump of fresh pork

(3) Whole ham

(4) Boneless ham

B. **Suggested Student Activities**

Using the Food Preservation Laboratory

a. Have student observe the cutting of a pork carcass into wholesale cuts.

b. Have students orally identify wholesale cuts.

c. Have students observe the cutting of wholesale pork cuts into retail cuts.

d. Have students orally identify retail cuts.

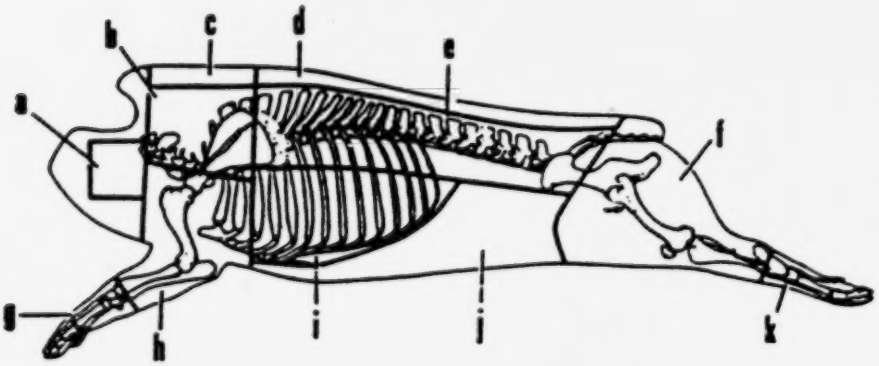
e. Divide class into groups of three or four and have students in each group take turns selecting appropriate tools and cutting one wholesale cut into retail cuts.

LESSON EXAMINATION

CUTTING PORK

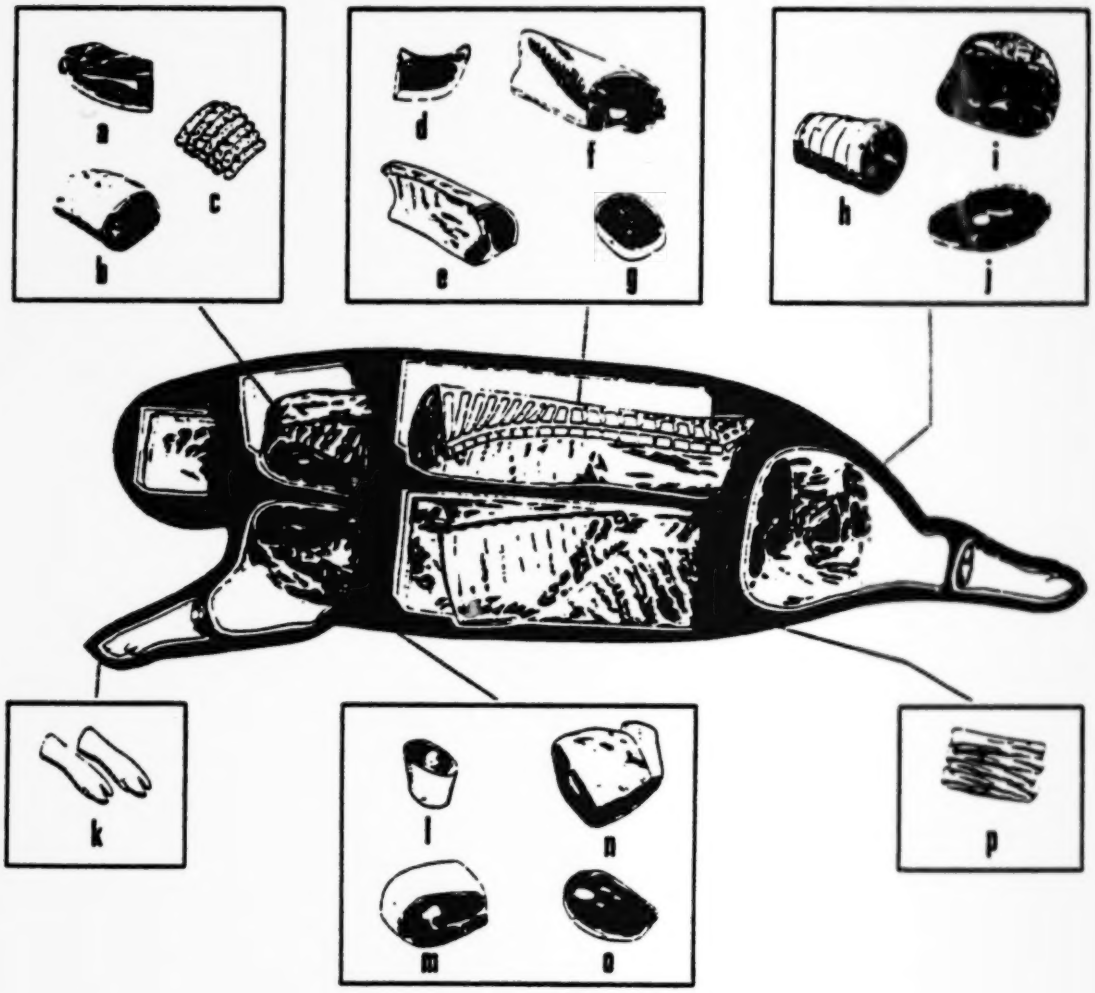
1. **From the illustration below, identify the wholesale cuts of pork by writing in the appropriate name in the corresponding blank.**

a. _____
b. _____
c. _____
d. _____
e. _____
f. _____
g. _____
h. _____
i. _____
j. _____
k. _____



2. Identify the retail cuts of pork shown in the illustration. Write the names of the cuts in the corresponding blanks provided.

a. _____
b. _____
c. _____
d. _____
e. _____
f. _____
g. _____
h. _____
i. _____
j. _____
k. _____
l. _____
m. _____
n. _____
o. _____
p. _____



INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT V: Meat Processing

LESSON 3: Cutting Chickens

I. **Preparation for Instruction**

A. **Student Objectives:**

1. **Terminal:** Describe and demonstrate the steps used in cutting chickens into parts.

2. **Specific:**

a. Identify the parts of a chicken.

b. Cut the chicken in several parts.

c. Cut the chicken into halves.

d. Cut the chicken into quarters.

B. **Review of Teaching Material**

1. Meatcutter, Instructional Materials Services, Division of Extension, The University of Texas.

2. The Meat We Eat, 11th Edition, The Interstate Printers and Publishers, Inc., 1977.

C. **Materials Required**

1. Sharp boning knife

2. Several whole chickens

3. Aprons

4. Overhead projector

5. Transparency

II. **Presentation of Lesson**

A. **Content Outline**

1. **Describe the classes of chickens**

a. Fryer or broiler

b. Roaster

c. Capon

d. Stag

e. Hen

f. Cock

2. **Identify the Several Parts of Chicken**

   Recognize the bone structure of the chicken (see TM11).

3. **Cut Chicken into Parts** (see TM12).

   1. Leg

   2. Drumstick

   3. Thigh

   4. Wings

   5. Breast

   6. Wishbone

   7. Back

   8. Back strips and neck

   9. Neck

4. **Cut Chicken into Halves** (see TM13).

5. **Cut Chicken into Quarters** (see TM14).

B. **Suggested Student Activities**

1. Divide class into groups of three or four. Have each group cut a fryer into parts, each student participating.

2. Have each student cut a fryer in halves.

3. Have each student cut a fryer in quarters.

LESSON 3 EXAMINATION

Cutting Chicken

1. Describe six classes of chicken.

2. How may a chicken be cut up? Give four ways.

3. Identify the several parts of a chicken.

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT V: Meat Processing

Lesson 4: Curing and Smoking of Meat

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** Understand how and why meats are cured and smoked.

2. **Specific:**

a. Define in writing the meaning of the word "cure".

b. Identify in writing the three basic curing ingredients and list two functions of each.

c. List in writing the methods of curing and an an advantage and disadvantage of each.

d. List in writing the benefits of smoking meat products.

e, List in writing the three types of casings.

B. **Review of Teaching Materials**

Laboratory Manual for Meat Science, Smith, King and Carpenter.

II. **Presentation of Lesson**

Content Outline

1. Curing is the addition of salt, sugar, and saltpeter to meats for the purpose of preservation, flavor enhancement, or color development. The functions of the three basic ingredients are as follows:

a. Salt -

(1) Contributes characteristic flavor to the product

(2) Acts as a preservative, inhibiting the growth of microorganisms

(3) Moves through meat by way of osmosis, enhancing the transport of nitrates, nitrites, and sugar into the muscle

b. Sugar -

(1) Contributes characteristic flavor to the product

(2) Counteracts the harshness of salt

(3) Provides a source of energy for the bacteria which convert nitrate to nitrite during long cures

c. Saltpeter

(1) Contributes characteristic flavor to the product

(2) Prevents warmed-over flavor in reheated products

(3) Retards the development of rancidity during storage

(4) Prevents the growth of Clostridium botulinum in canned products

(5) Contributes the characteristic cured-pink color to the product

2. There are several methods for applying cure to meats. They are as follows:

a. Dry curing--involves rubbing the external surface of the meat with the curing mixture. Penetration of curing ingredients is by osmosis. This method requires long periods of storage. Additional cure is applied during storage in a process called "overhauling."

(1) Advantages

(a) Results in unsurpassed flavor and texture of specialty products (country cured hams)

(b) No special equipment is necessary.

(c) A drier final product is obtained; thus the need for preservation is reduced.

(d) Surface bacteria are controlled, because concentrated salt kills all bacteria except those that are halophilic (salt-tolerant).

(2) Disadvantages

(a) Complete cure penetration requires from 35-45 days for hams and 8-14 days for bacon.

(b) Souring around the bones may occur because of lack of rapid enough salt penetration to the interior of the cut.

(c) Rancidity may occur as a result of oxidation of the fat during storage.

(d) High levels of shrinkage occur.

(e) The ultimate saltiness of products cured in this manner is intolerable to the general consuming public.

b. Curing with liquid--Water is used as a medium for dissolving the curing ingredients and facilitating contact between cure ingredients and meat.

Cover pickle curing involves putting the fresh product into the pickle or into the solution containing the curing ingredients. Penetration of the curing ingredients is by osmosis.

(1) Advantages

(a) Water dissolves all soluble ingredients, resulting in a more uniform distribution of ingredients.

(b) Water added to the product adds weight.

(2) Disadvantages

(a) Curing with cover solution without pumping some of the solution into the product can result in the bone's souring before the cure reaches the deeper portions of the muscle.

(b) Unless salt concentration is higher than for dry cure, the time required for curing is increased.

(c) A sweet pickle, or with sugar included, provides an excellent growing medium for yeasts and may become "ropy" and impart an off flavor to the product.

c. Injection curing--injection of pickle or sweet pickle into the product, by one of the following methods:

(1) Stitch or spray pumping--injecting the solution by spraying via a needle, under pressure, into the muscle. The needle, or series of needles, is hollow with a series of holes along the needle body. Stitch pumping is used for bacon, hams, pastrami, picnic shoulders, corned beef, and others.

(2) Artery pumping--allows for the best possible distribution of cure by using the vascular system for distribution. The needle is forced into an artery and curing solution is pumped in under approximately 40 psi of pressure.

(3) Machine injection—used in large commercial operations for injection of pickle into pork bellies.

d. Combination Curing

(1) Injection curing with dry cover is used to obtain a final product very similar to a dry cure. This method allows for faster curing, less dehydration, and less danger of spoilage.

(2) Injection curing with a cover pickle allows for faster curing by covering the product with brine (cure dissolved in water) after injection.

3. Appropriate amounts of ingredients and reasonable curing times for each curing method are given below.

a. Dry Curing (DC)

(1) Dry salt cure--The dry salt cure is a process that is very old in origin. It involves the rubbing and packing of meat in salt for considerable periods of time. The only use of this method today is in the production of salt pork where fat backs, heavy jowls, and occasionally heavy sow bellies are rubbed or packed with dry salt. Salt pork finds favor in the South where it is used as a seasoning meat. The usual packing or rubbing mixture is 10 ounces of saltpeter to each 100 pounds of salt. Use 10 pounds of cure for each 100 pounds of pork as it is layered. Allow to cure for 2 to 8 weeks.

(2) Dry sugar cure--The dry sugar cure has proven to be very effective. Its chief advantages are as follows: (1) the rate of cure is more rapid than the immersion cure, because the curing ingredients are applied directly to the meat surface in their full concentration; (2) the curing can be conducted safely at higher and wider temperature variations than is possible in immersion curing; (3) the time schedule is not exacting; (4) there is less spoilage in the hands of the novice or under unfavorable curing conditions. A workable curing mixture can consist of 8 pounds of curing or table salt, 3 pounds of cane sugar, 3 ounces of saltpeter, and 1/2 ounce of sodium or potassium nitrite. If nitrite is not available, use 4 ounces of saltpeter.

Use one ounce of cure for each pound of pork. The process will require three separate rubbings for ham at a 3-5 day

interval--two rubbings for picnics, one rubbing for bacon.

The length of curing period is seven days per inch of thickness. If a ham is six inches thick, 42 days will be required to cure the ham. A two-inch bacon will take 14 days.

4. **Smoking of Meat Products**

   a. Originally, smoking, like curing, was used to preserve meat by drying. Today, smoke is usually applied for flavor instead of preservation. Hardwoods are used, since the burning of softwoods results in sooty deposits on the smoked product. The benefits of smoking are as follows:

      (1) flavor and odor enhancement

      (2) color development on the outside of the product

      (3) color stabilization of muscle

      (4) preservation of the product

   b. In addition to using smoke created by burning wood, liquid smoke compounds are being widely used.

5. Casings are used as a container for sausages during cooking and smoking. There are three kinds:

   a. Natural casings come from the digestive systems of animals. These casings are edible and allow greater smoke penetration and conform to the size of the sausage during cooking.

   b. Artificial or cellulose casings are made from cotton linter. These casings are inedible, easy to handle, resistant to breakage and permeable to smoke when moistened.

   c. Reconstituted collagen casings are often used on dry sausage. The permeability, shrinkage capabilities, edibility (in smaller casings) and a wide variety of sizes and forms make

casing versatile. Collagen casings are fragile and have poor resistance to abuse.

6. **Principles and Procedures in the Manufacture of Fresh Pork Sausage**

   a. Country style—This style of sausage usually contains from 10 to 20 percent beef ground with fresh pork. The grinding is done with a coarse plate (3/16 inch) and does not contain sage in the seasoning mix. Country style sausage is very well adapted for smoking.

   b. Breakfast style—This is an all pork sausage that is finely ground and seasoned with salt, pepper and sage. It is stuffed into medium or large casings. It can be smoked or pan fried. Sausage shall not exceed 50 percent fat in content.

   c. Seasoning pork sausage—Seasoning of sausage is a matter of personal preference. Some like it mild; others very spicy or hot. A very popular mix includes the following: 25 to 30 ounces of table salt, 6 ounces of black pepper and 2 ounces of sage per 100 pounds of ground pork. Excellent seasoning mixes can be purchased from a number of wholesalers.

LESSON 4 EXAMINATION

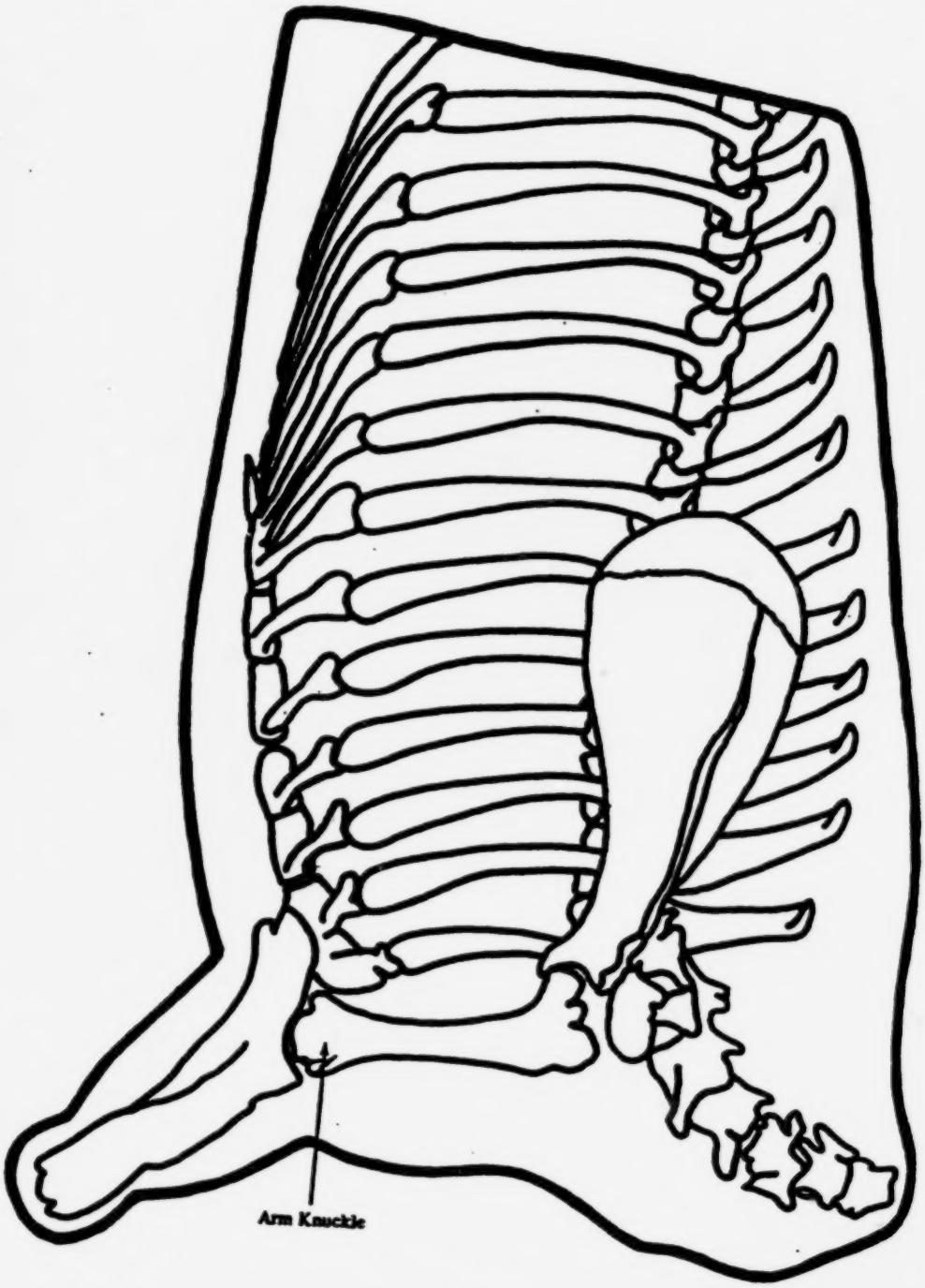
1. Define the term "cure" as associated with meat.

2. List three basic curing ingredients and two functions of each.

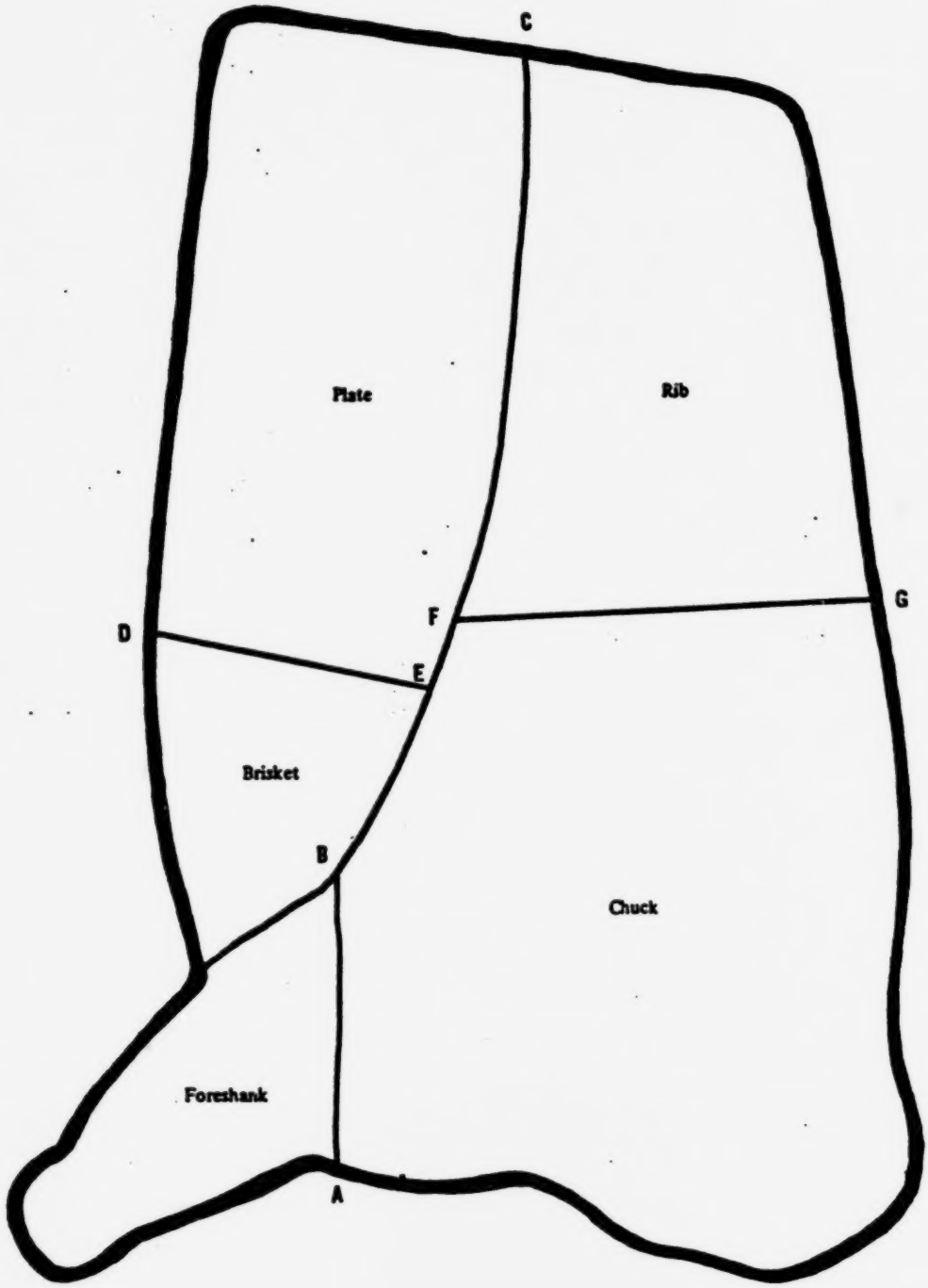
3. List the methods of curing and an advantage and disadvantage of each.

4. List the benefits of smoking meat products.

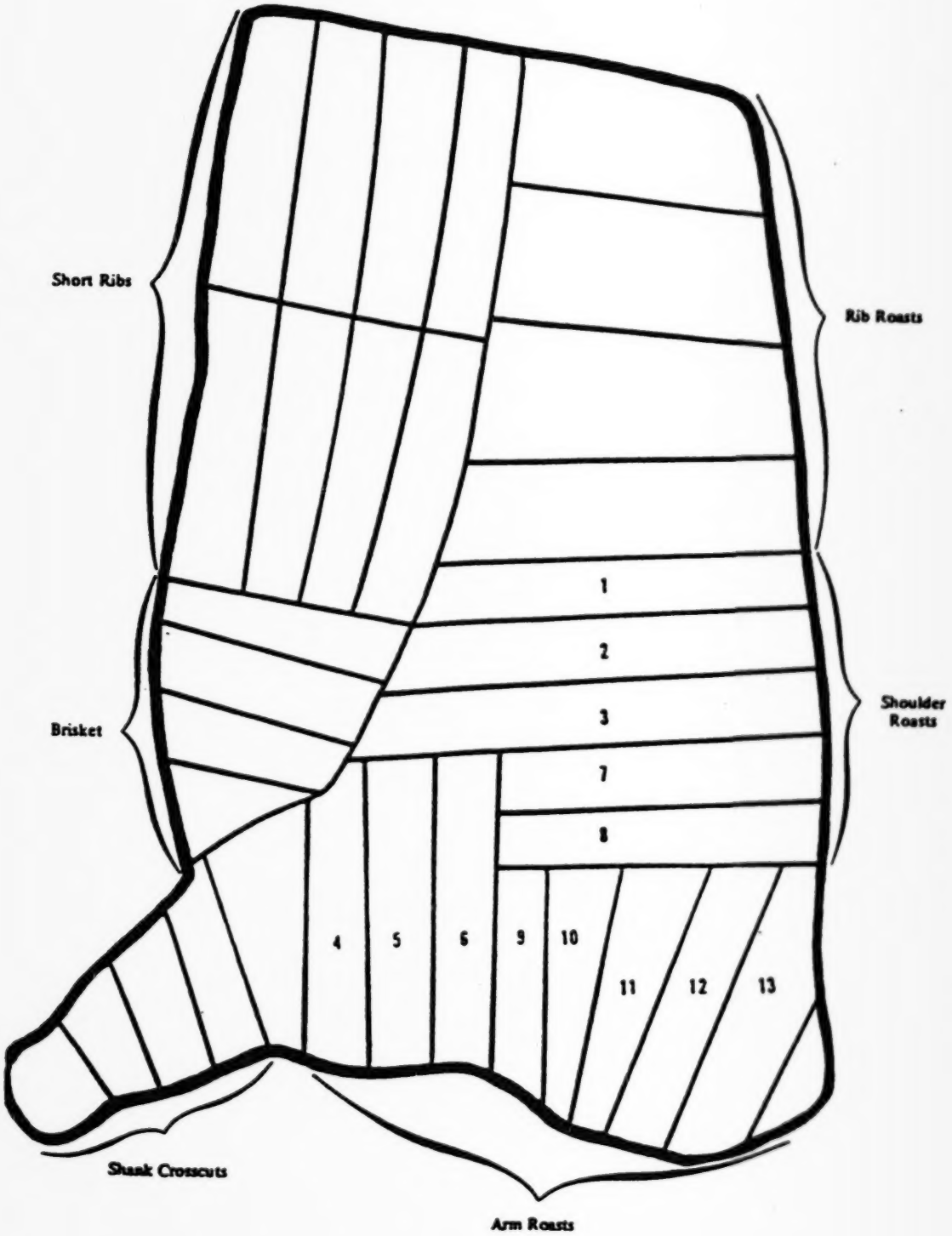
5. Name three types of casings.



Skeletal Structure of the Forequarter

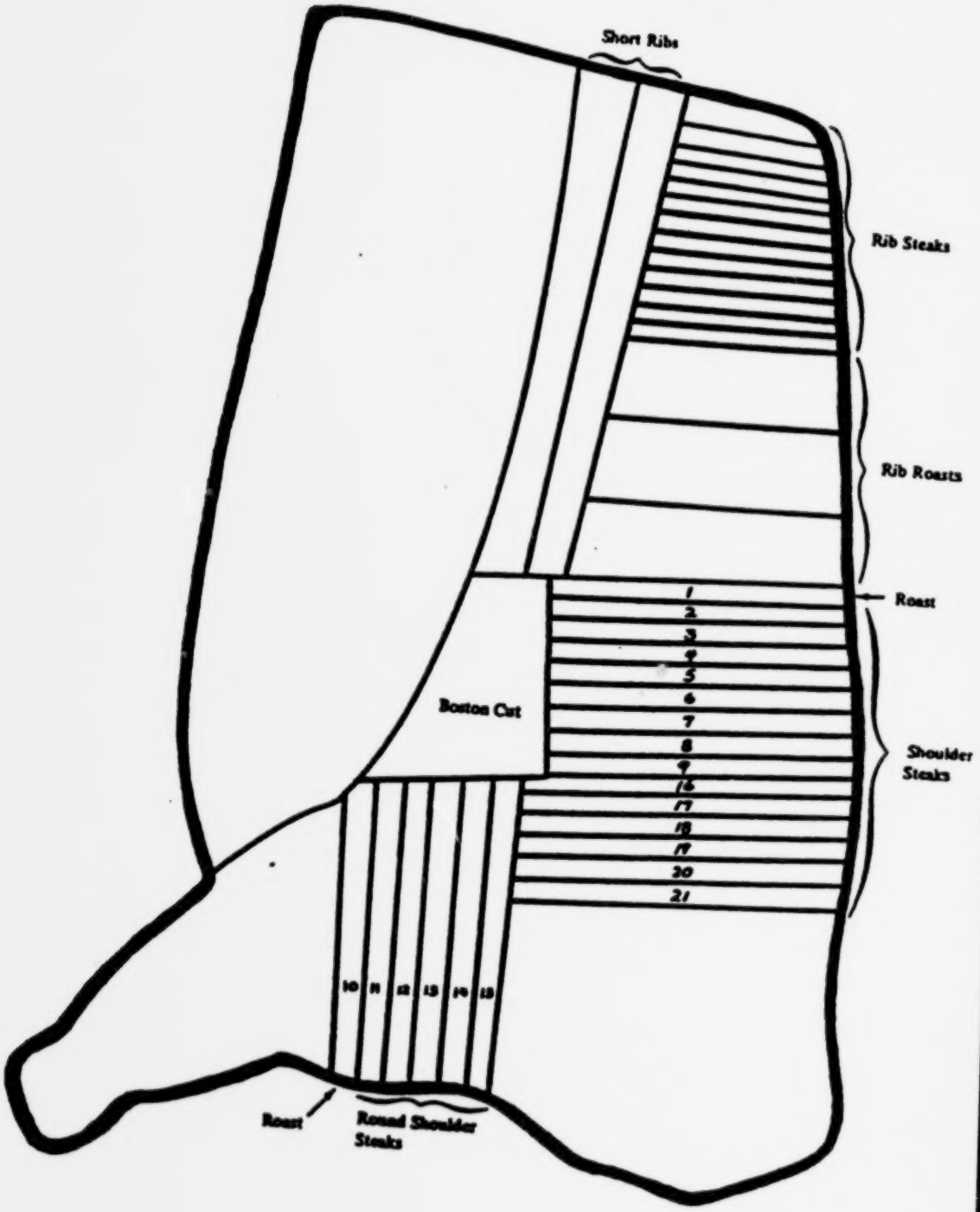


Primal Cuts of the Forequarter



Retail Cuts of the Forequarter

TM3



Retail Cuts of the Forequarter

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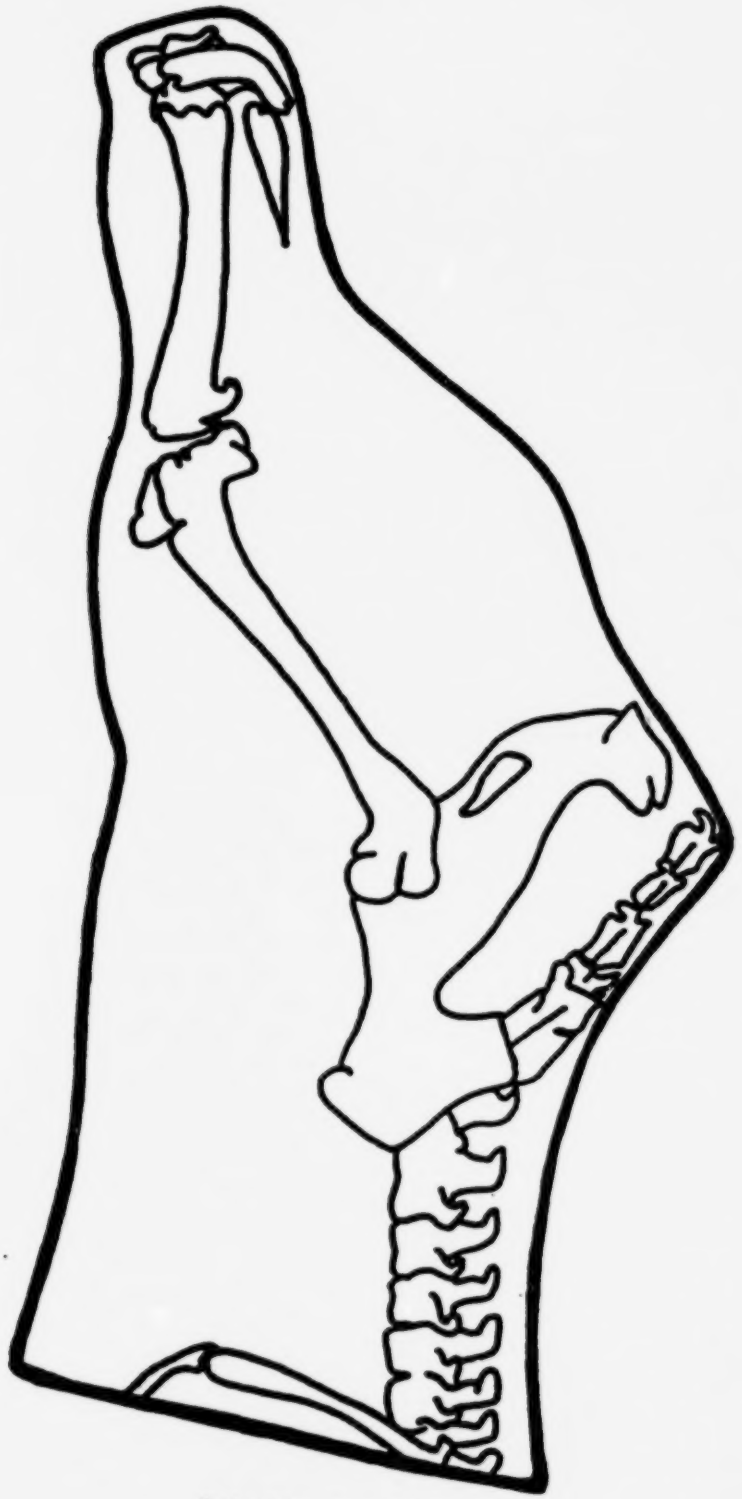
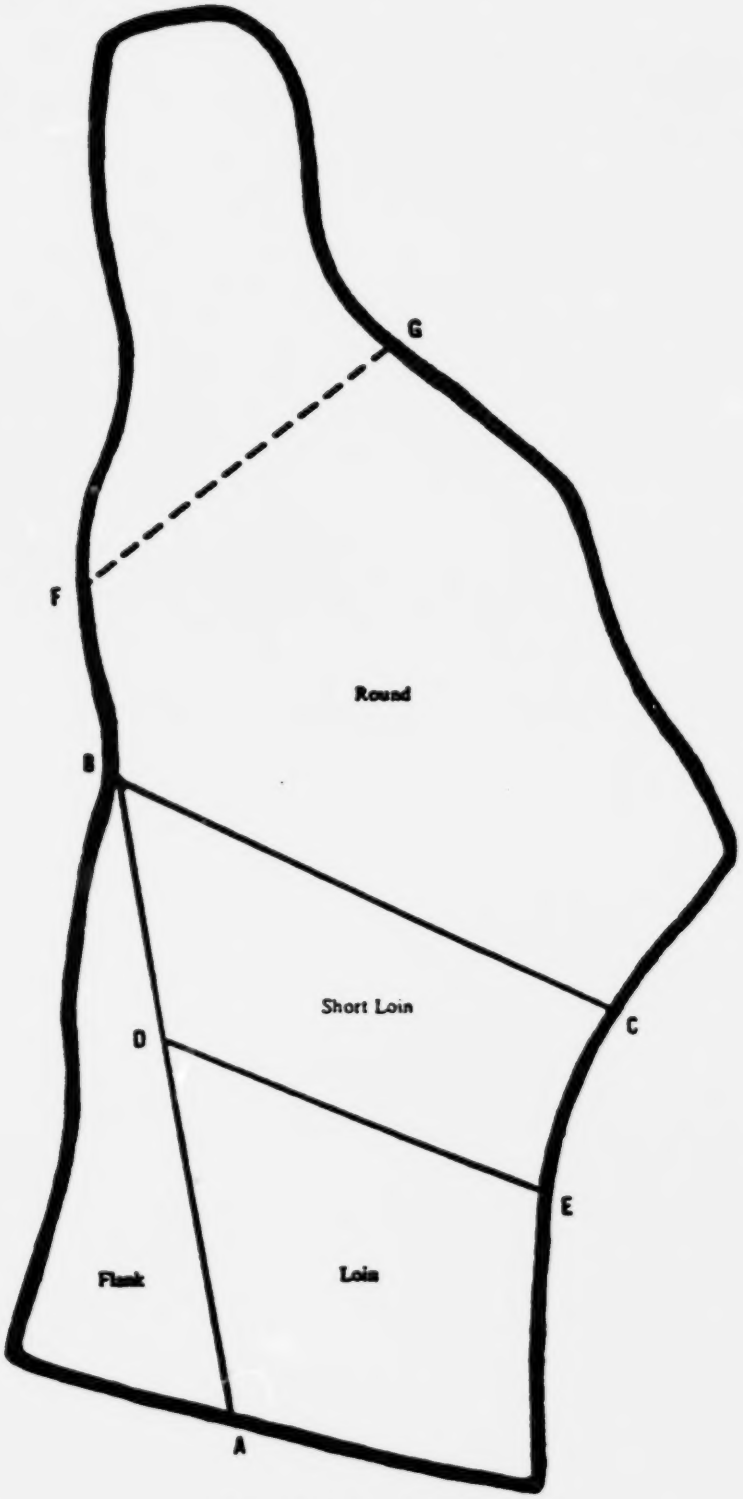
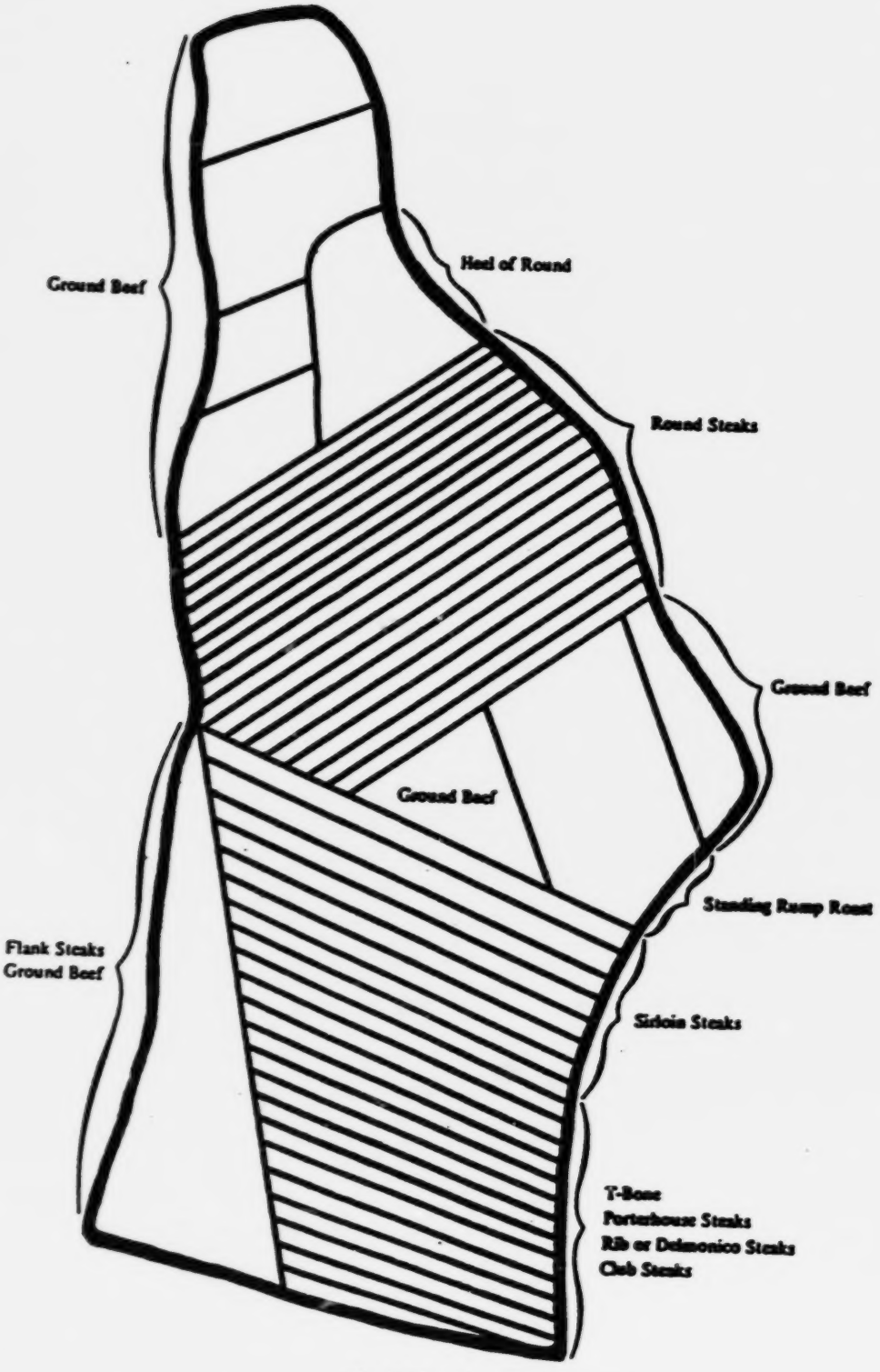


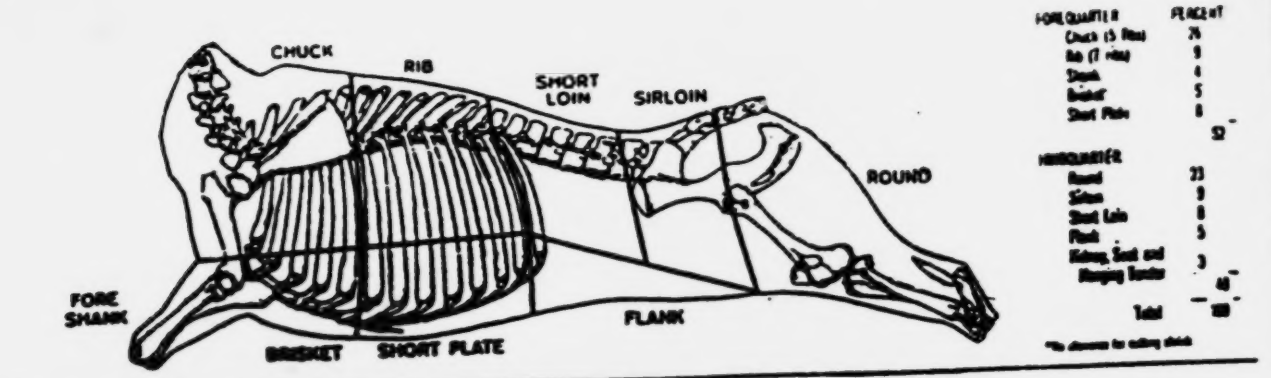
Skeletal Structure of the Hindquarter



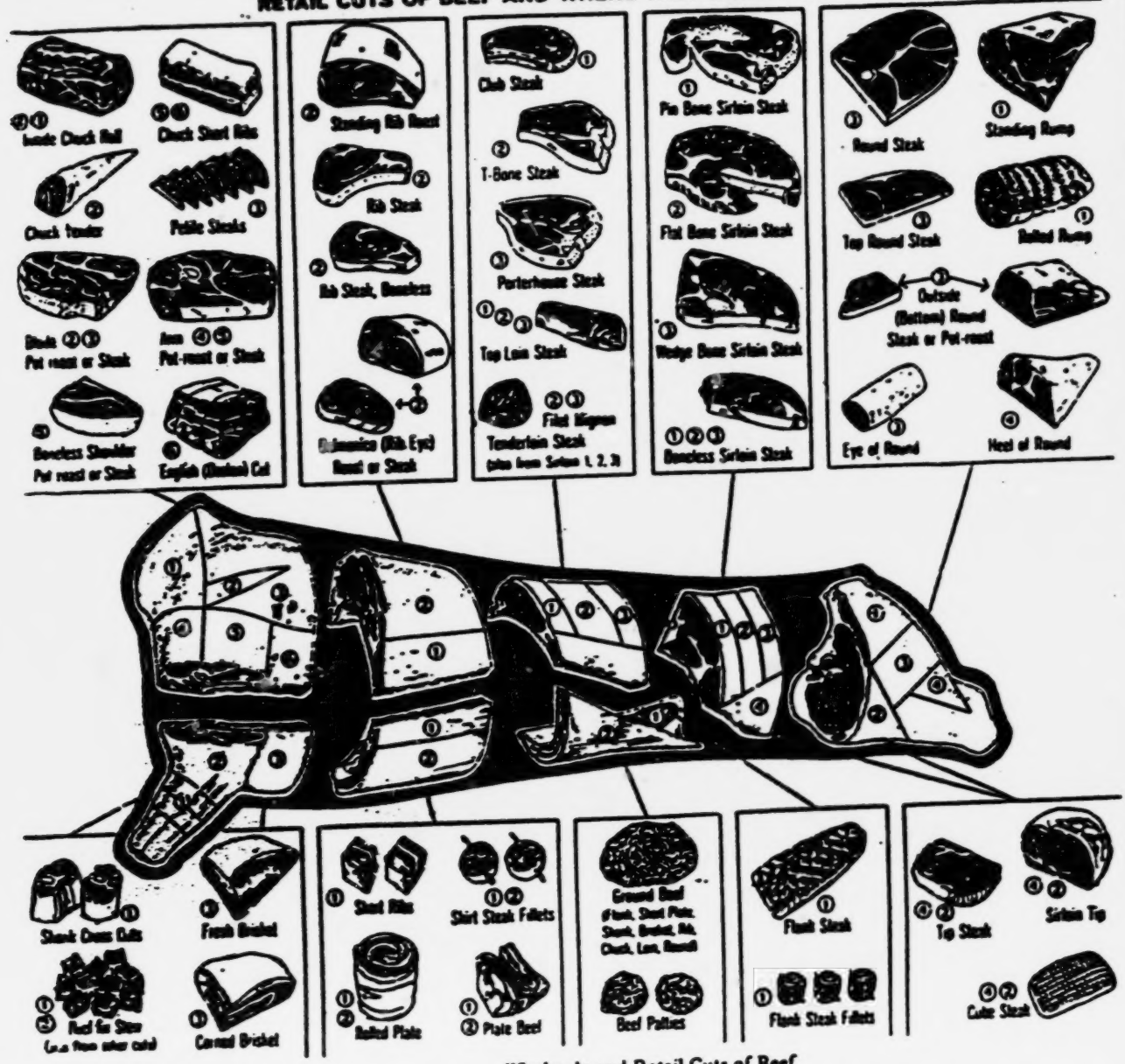
Primal Cuts of the Hindquarter



Retail Cuts of the Hindquarter



RETAIL CUTS OF BEEF AND WHERE THEY COME FROM



Wholesale and Retail Cuts of Beef

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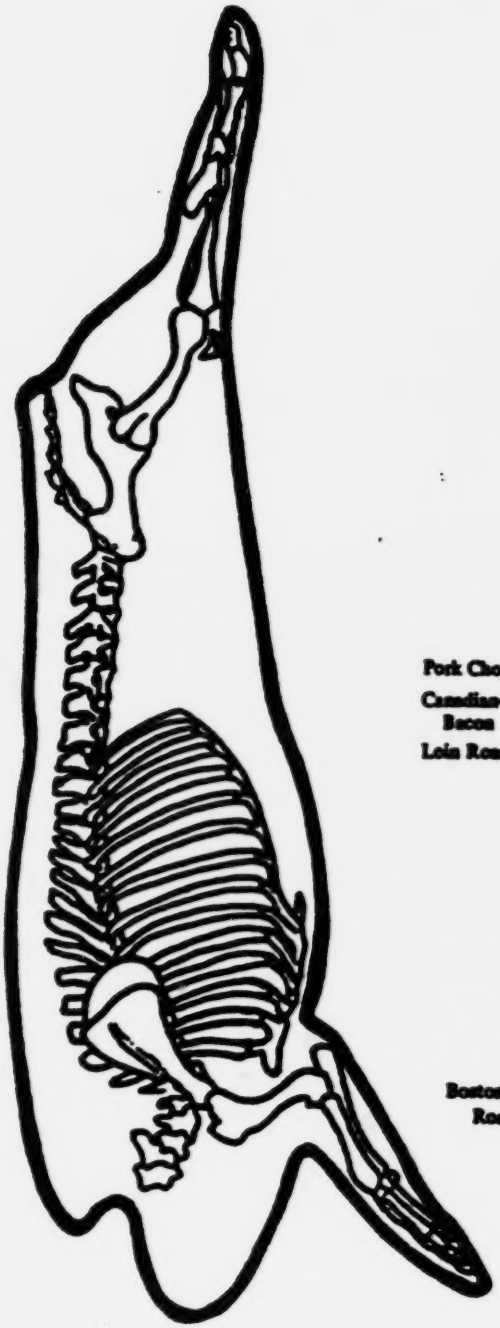
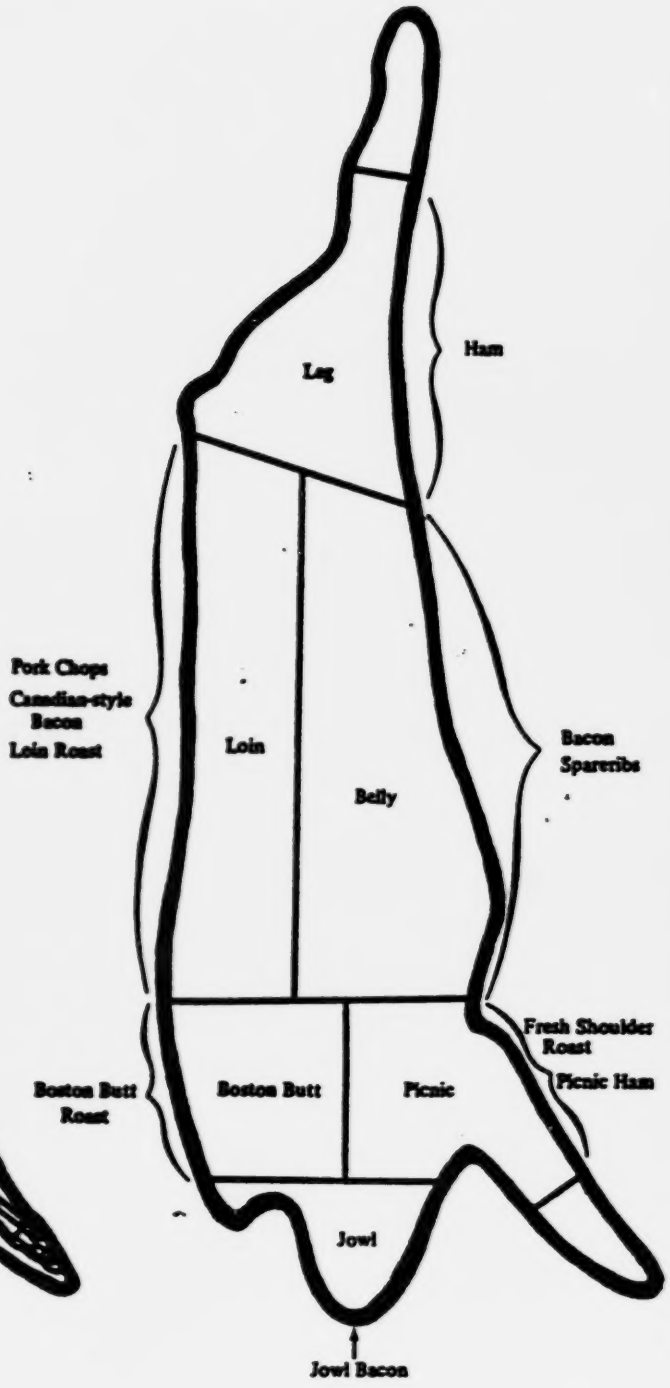
TM8

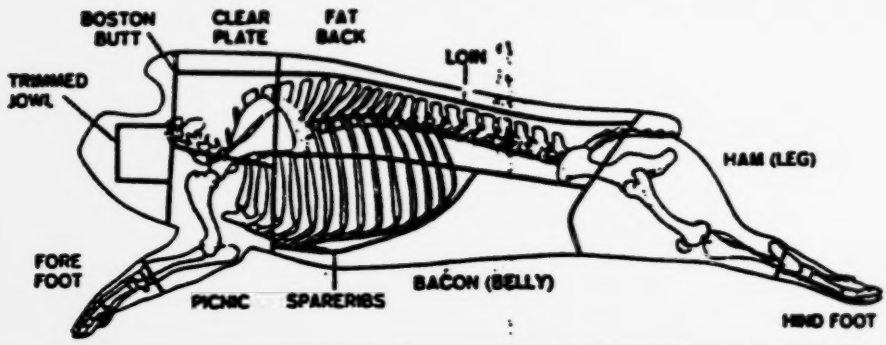


Skeletal Structure of Pork



Pork Wholesale and Retail Cuts

WHOLESALE CUTS OF PORK AND THEIR BONE STRUCTURE

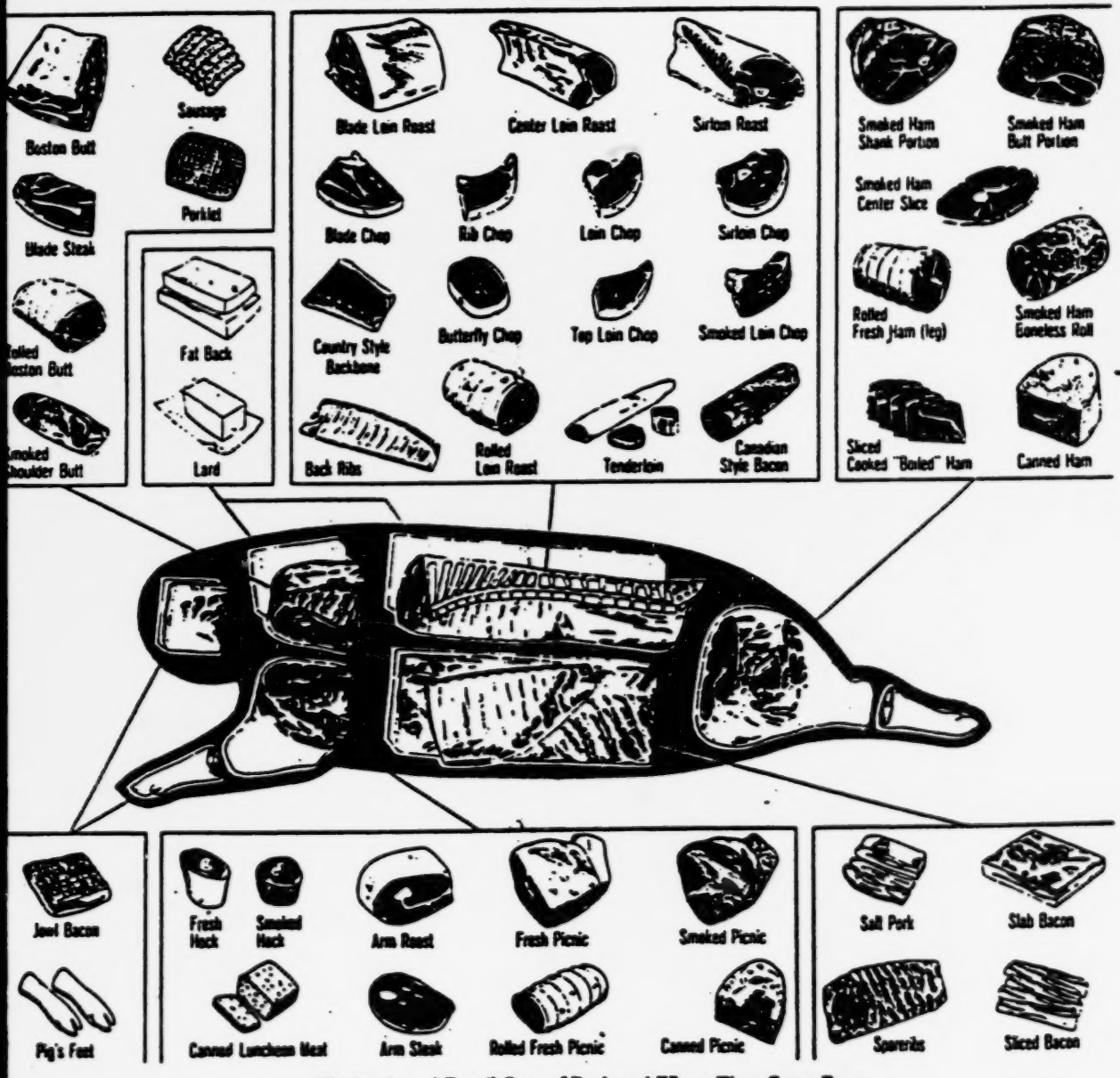


APPROXIMATE YIELDS*

NAME OF CUT	PERCENT
Fresh Hams, Skinned	18.5
Loins, Blade on	15.0
Boston Butt	6.5
Picnic, Regular	8.5
Bacon, Square Cut	17.5
Spareribs	3.0
Jowl, Trimmed	1.0
Feet, Tail, Neckbones	5.0
Fat Back, Clear Plate and all Fat Trimmings	10.0
Sausages, Trimmings	9.0
Total	100

*Based on dressed hog, head off, cured and as shipped to retail store

RETAIL CUTS OF PORK AND WHERE THEY COME FROM



Wholesale and Retail Cuts of Pork and Where They Come From

TM10

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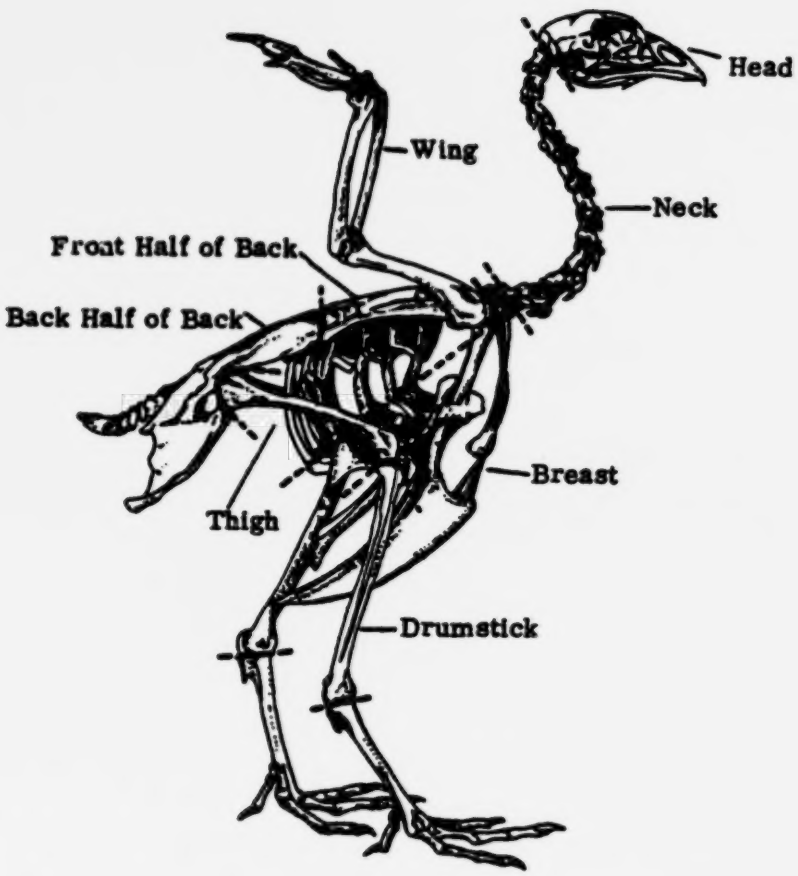
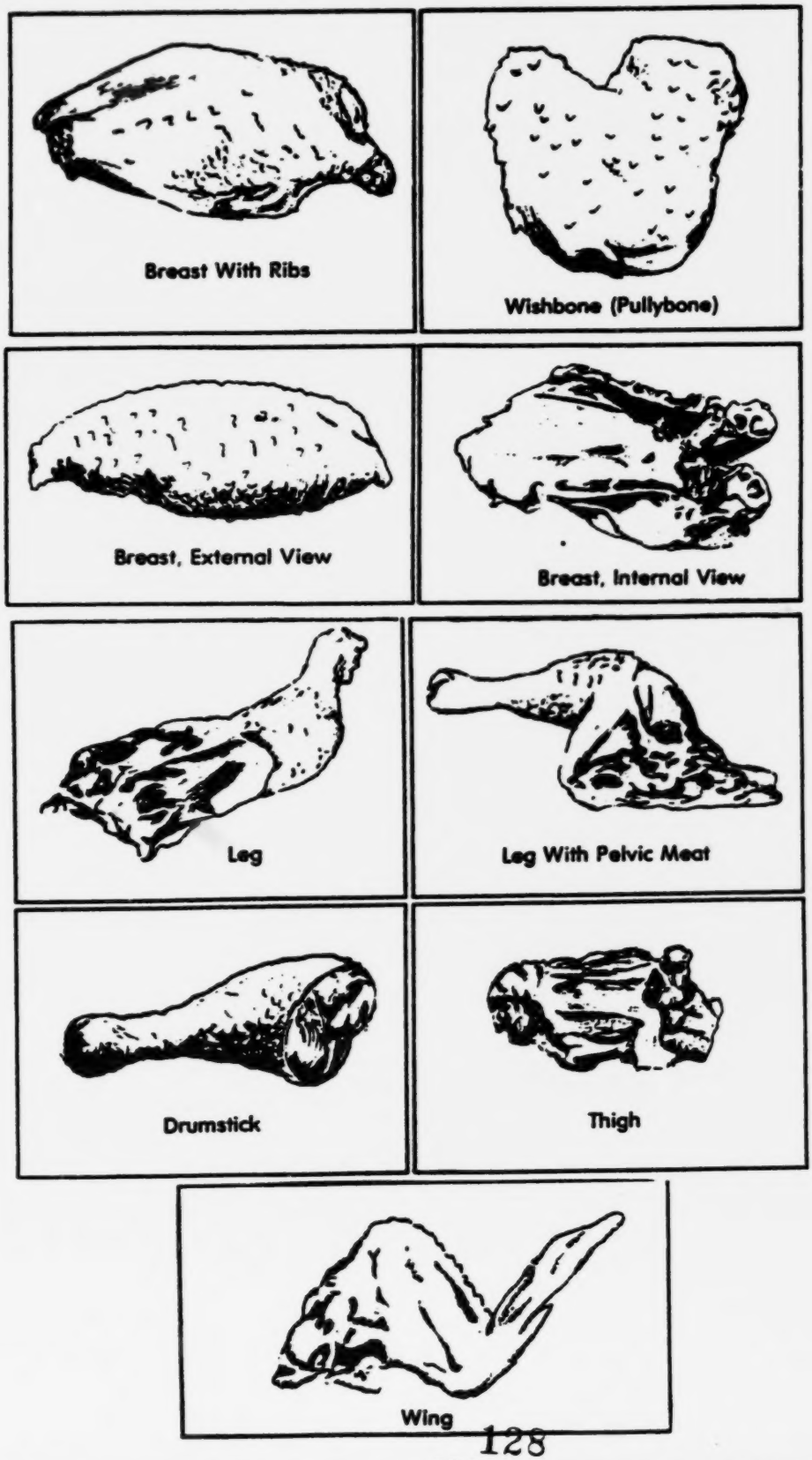
SKELETON OF CHICKEN INDICATING POINTS TO SEVER PARTS



COMMONLY CUT CHICKEN PARTS



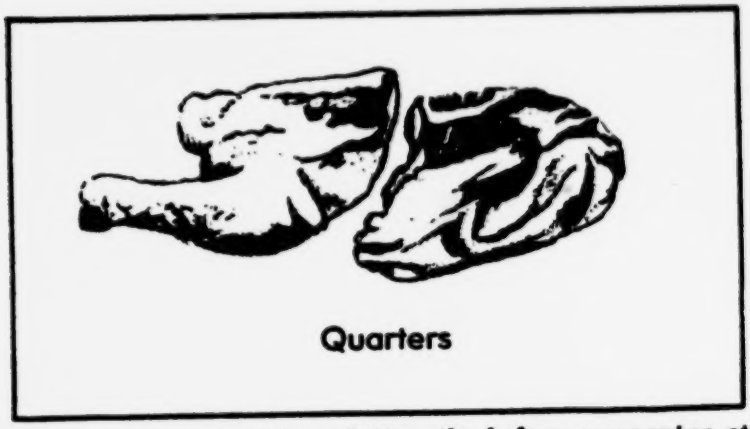
TM12

CHICKEN HALVED

Half of Chicken

Chicken halves are prepared by making a full-length back and breast split of the carcass so as to produce approximately equal right and left sides.

CHICKEN QUARTERED



Quarters

The quarters are prepared by splitting the halves crosswise at almost right angles.

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT VI: Meat Grading and Evaluation

Lessons: 1 - Beef Grading and Evaluation

2 - Pork Grading and Evaluation

3 - Lamb Grading and Evaluation

Lesson 1: Beef Grading and Evaluation

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** Determine the quality and yield grades of beef.

2. **Specific:**

a. List the eight quality grades of beef.

b. Explain in writing the relationships between maturity, marbling, color, and texture to the final quality grade.

c. Explain in writing "cutability," what cutability is and how it is derived as a yield grade.

B. **Review of Teaching Materials**

1. Laboratory Manual for Meat Science, Smith, King and Carpenter, American Press.

2. Meat Evaluation Handbook, National Live Stock and Meat Board.

C. **Materials Required**

1. Overhead projector

2. Screen

3. Transparencies

II. **Presentation of Lesson**

Content Outline

1. **Definitions**

   a. Cutability--ratio of retail cut weight (trimmed, boned or partially boned) to carcass weight. It is related to carcass fatness and muscling. It is the proportion of the carcass that is salable as trimmed retail cuts.

   b. Quality—those desired characteristics of lean, fat, and bones associated with palatability, acceptability, and marketability.

   c. Trimmable fat--that fat which exceeds the maximum level which could be sold on a retail cut.

   d. Marbling—intramuscular fat.

   e. Texture—the coarseness or fineness of the grain of the lean as observed in the rib and loin eye.

   f. Feathering—fine streaks of fat intermingled with the lean between the ribs.

   g. Feather or chine bone--split spinous processes which extend from the vertebrae or backbone toward the dorsal side of the back.

   h. Buttons—soft cartilage tips on the outside of the feather or chine bones which ossify as an animal matures.

   i. Aitch bone--the split pelvic bone of a carcass.

   j. Seam fat—deposits of fat between the muscles or intermuscular fat.

2. a. U.S.D.A. inspected beef carcasses are rolled (stamped) with two separate kinds of grades. One indicates a quality or palatability grade and the other a yield or cutability grade.

b. The quality grades of beef and grade criteria are as follows:

1. Prime*)
)
2. Choice) Under 42 months
)
3. Good)

4. Standard

5. Commercial--Young cows over 3 years old

6. Utility--Bulls and stags over 3 years old

7. Cutter)
) Old bulls and cows
8. Canner)

These refer to those beef characteristics of (1) appearance and consumer appeal, and (2) the palatability characteristics of tenderness, flavor, and juiciness.

* except cows

c. Yield grades are designed to identify carcasses for differences in cutability or yield of boneless, closely trimmed retail cuts from the round loin, rib, and chuck. Yield grades are expressed as a numeral, 1 through 5, with 1 having the highest degree of cutability and 5 the least.

3. **Factors involved in establishing the quality grade of beef:** Maturity, marbling, color of lean, texture or firmness of lean, and compensation

a. Maturity--Since the age of the animal at slaughter is closely associated with the eating qualities of beef, it is important to estimate the maturity of the carcass or cuts.

Referring to TM1, beef carcass grade standards provide five maturity groups. Group A indicates the carcasses from very young animals. Group A is characterized by soft, porous "chine bones" which terminate in soft, white cartilages. The sacral vertebrae show distinct separation, and cartilage is present on the split "aitch bone." The lean

is fine and smooth in texture and light red in color. Carcasses with evidences of advanced maturity (E maturity group) have hard, white chine bones with the outlines of the cartilages on the ends of the thoracic vertebrae being barely visible. The rib bones are wide and flat, and the rib-eye muscle is dark red and coarse in texture.

Note that maturity groups A and B are narrow and that marbling is used to determine the top four grades of beef. Signs of advanced maturity should be studied closely, as old beef automatically falls into one of the bottom 3 grades.

The approximate relationship between maturity and age is as follows:

Maturity Group	Approximate Chronological Age (in months)
A	9 - 30
B	30 - 42
C	42 - 72
D	72 - 96
E	more than 96

The chart seen on TM2 describes the appearance of the vertebrae on the five maturity designations.

In steer, heifer, and cow beef, the color and texture of lean flesh also undergo progressive changes with maturity. In progressively more mature carcasses, the texture of the lean will become increasingly coarse and the color of the lean will become darker red. In determining the maturity of a carcass in which skeletal and muscular indicators differ, slightly more weight is placed on skeletal factors. In no case can the overall maturity of the carcass be considered more than one full maturity group different from that indicated by its bones and cartilage.

Beef muscle of each maturity group appears as follows:

Maturity Group	Muscle Color	Muscle Texture
A	Light cherry red	Fine
B	Slightly dark red	Fine
C	Slightly dark red	Moderate
D	Moderately dark red	Slightly coarse
E	Dark red	Coarse

b. Marbling is the primary determining factor of the U.S.D.A. quality grade. There are ten degrees of marbling.

Abundant	Small
Moderately Abundant	Slight
Slightly Abundant	Traces
Moderate	Practically devoid
Modest	Devoid

Minimum marbling requirements are presented in TM3.

Illustrations of the lower limits of certain degrees of marbling are illustrated on TM4.

Regardless of the extent to which a carcass may exceed the minimum of a grade, a carcass must meet the minimum firmness requirements for its maturity to qualify for a grade. Requirements of firmness are illustrated below and on TM5.

4. **Yield Grading of Beef Carcasses**

a. The U.S.D.A. has developed a system of measurements for estimating the yield of boneless, closely trimmed retail cuts from the round, loin, rib, and chuck. Carcass weight, fat thickness over the rib eye, rib eye area at the twelfth rib, and estimated percent of internal (kidney, pelvic, heart) fat are used in a formula to predict this end point which is termed "cutability." Under

the cutting and trimming methods used in developing these yield grades, each corresponds to a range of 2.3% of chilled carcass weight. The following table lists each grade and the expected cutability.

YG 1	52.35% or more
YG 2	52.3 - 50.0%
YG 3	50.0 - 47.7%
YG 4	47.7 - 45.4%
YG 5	45.4% or less

b. The amount of external fat on a carcass is evaluated over the rib-eye muscle at a point three-fourths of the length of the rib eye from its chine bone end. This measurement may be adjusted up or down to allow for unusual amounts of fat on other parts of the carcass. An adjustment of one- or two-tenths of an inch is not uncommon. Each one-tenth inch change in adjusted fat thickness over the rib eye changes the yield grade by 25% of a yield grade.

c. The amount of kidney, pelvic and heart (KPH) fat considered includes the kidney knob, lumbar and pelvic fat in the loin and round, and the heart fat in the chuck and brisket area. This is a subjective evaluation and is expressed as percent of carcass weight. A change of 1% of these fats changes the yield grade by 20% of a yield grade.

d. The area of the rib eye is determined where this muscle is exposed by ribbing. This area may be estimated subjectively or measured. A change of 1 square inch in the area of the rib eye changes the yield grade by 30% of a yield grade.

e. Hot carcass weight (or chilled weight x 102%) is used in determining the yield grade. As carcass weight increases, the percentage of retail cuts decreases. A change of 100 pounds changes the yield grade by 40% of a yield grade.

f. Cutability grade formula--refer to TM6.

LESSON 1 EXAMINATION

1. Define:

   a. Cutability

   b. Marbling

2. List the quality grades of beef and the criteria associated with each grade.

3. Why is the consideration of maturity so important in the grading of beef?

4. What four factors are determined and used in a formula to determine a yield grade?

5. Calculate the yield for a carcass that grades prime, weighs 500 lbs., has 4.5% internal fat, rib eye area of 9 square inches and fat thickness of 1 inch.

   $$YG = 2.50 + 2.50\ T + 0.20\ Pt. + .0038\ W - .32\ A$$

   T = Fat thickness of twelfth rib
   Pt. = Percent kidney, pelvic and heart fat
   A = Rib eye area
   W = Hot carcass weight

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT VI: Meat Grading and Evaluation

LESSON 2: Pork Grading and Evaluation

I. **Pork Grading and Evaluation**

A. **Student Objectives**

1. **Terminal:** Assign a U.S. market grade for pork carcasses.

2. **Specific:**

a. Describe how to make determination of sex by carcass evaluation.

b. Set forth the minimum acceptability standards of lean.

c. Show by written example how to take measurements and apply them to the pork grading nomograph.

B. **Review of Teaching Materials**

1. Laboratory Manual for Meat Science, Smith, King and Carpenter, American Press.

2. Meat Evaluation Handbook, National Live Stock and Meat Board.

C. **Materials Required**

1. Overhead projector

2. Screen

3. Transparencies

II. **Presentation of Lesson**

A. **Content Outline**

1. **Definitions**

a. Backfat--deposit of fat over the back of a carcass

b. Backfat thickness--average of 3 measurements of backfat in pork carcasses taken opposite the first rib, last rib, and last lumbar vertebrae

c. Carcass length--length as measured from the anterior edge of the first rib to the anterior edge of the aitch bone (TM1)

2. Because of the relationships between sex and/or sex condition in pork and the acceptability of prepared meats to the consumer, separate standards have been developed for (1) barrow and gilt carcasses and (2) sow carcasses. There are no official standards for grades of stag and boar carcasses. The determination of sex condition is based on the following:

a. Barrow carcasses are identified by a small pizzle eye and the typical pocket in the split edge of the belly where the preputial sheath was removed.

b. Gilt carcasses are recognized by the smooth split edge of the belly, the absence of the pizzle eye and the lack of development of mammary tissue.

c. Sow carcasses differ from gilts in that mammary tissue has developed in connection with advanced pregnancy or lactation.

d. Stag carcasses have the pocket in the split edge of the belly typical of males, and the pizzle eye is larger and more prominent than in barrows. The stag will often have rather heavy shoulders, thick skin over the shoulders, large bones and joints, and a dark red colored lean.

e. Boar carcasses have the same distinguishing characteristics as stag carcasses, but to a more pronounced degree.

3. Pork muscles vary widely in color, firmness, structure, and marbling.

a. Color—Uniform grayish pink color is desired.

b. Firmness—Soft is inferior to very firm.

c. Structure--Open or loose structure is inferior to a tight or closed structure.

d. Marbling--Muscles devoid of marbling are inferior to those with abundant amounts.

4. Federal grades for pork carcasses are intended to relate market desirability and, in effect, to segment all carcasses of the same relative value into one of five grades. Carcass measurements and subjective scores are combined and used to classify carcasses according to their cutability and quality indicating characteristics. Any carcass may then be segmented into one of the five grades. Four grades (U. S. No. 1, U. S. No. 2, U. S. No. 3, and U. S. No. 4) are provided for carcasses which have indications of acceptable lean quality and belly thickness. These grades are based entirely on the expected carcass yields of the four lean cuts (ham, loin, picnic shoulder, Boston butt). Carcasses with indications of less than acceptable palatability; those with thin, soft bellies; and those which are soft and/or oily, are all graded U. S. Utility.

5. The factors involved in estimating cutability and quality are as follows:

   a. Cutability—carcass length or weight, average backfat thickness, muscling score

   b. Carcass quality—firmness of fat and lean, color of the lean, feathering in the rib cage, belly thickness

6. The quality of lean is best evaluated by observing the loin eye muscle at the tenth rib. If this muscle is not exposed, firmness of the fat and lean, amount of feathering between the ribs, and the color of the lean are observed.

7. The four U. S. grades are provided for carcasses which have indications of acceptable lean quality and belly thickness. These grades are based entirely on expected yields of the four lean cuts, and no consideration is given to quality superior to that described as minimum for the grades.

8. Carcasses vary in their yields because of variations in the degrees of fatness and muscling.

   a. In some carcasses, the actual average backfat is not representative of their degree of fatness. If the backfat average taken at the first rib, last rib, and last lumbar vertebrae does not seem representative, adjustments are made. These adjustments, while not uncommon, should seldom exceed .2 inch.

   b. The degree of muscling, as noted in TM8, is specified for each of the four grades. For purposes of these standards, six degrees of muscling are recognized: very thick, thick, moderately thick, slightly thin, thin, and very thin. The degrees which are typical for carcasses at the minimum of U. S. 1 through 5 are respectively: very thick, thick, moderately thick, slightly thin, and thin.

   c. In each grade, a superior development of muscling is permitted to compensate for a greater average backfat at the rate of .1 inch greater backfat thickness for a full degree of superior muscling. Except for U.S. No. 1, the reverse kind of compensation is also permitted at the same rate. In no case, may the combined effect of variations from normal fat distribution and muscling alter the final grade more than one full grade as indicated by actual average backfat thickness and carcass length or weight.

B. **Assigning the Numerical Grade**

   1. Measure carcass length from anterior first rib to anterior aitch bone.

   2. Measure backfat thickness with a ruler at the first rib, last rib and last lumbar vertebrae and calculate the average.

   3. Evaluate the degree of muscling and assign a U.S.D.A. muscling score.

   4. Use the pork grading nomograph TM9 and plot the grade. Adjust if necessary.

LESSON 2 EXAMINATION

1. Discuss how a person can identify a gilt carcass from a barrow carcass.

2. The grades of pork are based entirely on _____.

3. How is the average backfat thickness of a carcass determined?

4. Define carcass length.

5. How is a U.S.D.A. muscling score arrived at?

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT VI: Meat Grading and Evaluation

LESSON 3: Lamb Grading and Evaluation

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** Assign a U.S.D.A. grade to lamb carcasses.

2. **Specific:**

a. Use the cutability formula to determine yield grades in written problems.

b. Discuss how to determine lamb from mutton carcasses.

B. **Review of Teaching Materials**

1. Laboratory Manual for Meat Science, Smith, King and Carpenter, American Press.

2. Meat Evaluation Handbook, National Live Stock and Meat Board.

C. **Materials Required**

1. Overhead projector

2. Screen

3. Transparencies

II. **Presentation of Lesson**

A. **Content Outline**

1. Objective measures of lamb quality are usually based on evaluation of flavor, tenderness, and juiciness of the cooked product and in the order specified.

2. Federal grades classify lamb carcasses into one of five quality grades and one of five cutability grades. The quality grades are: prime, choice,

good, utility, and cull. Yield grades and the expected yield of boneless, closely trimmed retail cuts are as follows:

Yield Grade 1	47.3% or more
2	45.5 - 47.3%
3	43.7 - 45.5%
4	41.9 - 43.7%
5	41.9% or less

3. Quality grades are based on two primary criteria: (1) factors involved with palatability and (2) conformation, which estimates the percent of the carcass consisting of the more valuable cuts and the ratio of meat to bone in the carcass. Quality factors involved are:

Cutability	Carcass Quality
Leg Conformation Score	Conformation
Thickness of External Fat	Maturity
Percent of Internal Fat	Firmness of Flank
	Feathering in the Ribcage
	Fat Streaking in the Flank

Fat streaking in the flank is assumed to be a useful predictor of marbling in the muscle.

4. Maturity—In the dressing of sheep carcasses, the foot and pastern are removed at the ankle. There is a "round" or "spool joint" on the lower end of the cannon bone. A "break-joint" is located immediately above the "spool joint" at the region of bone growth. This cartilage will stop growing with age and until the animal is 12 to 14 months old, it is usually possible to remove the foot at the "break-joint." A carcass is required to have "break-joints" to be graded as lamb. Carcasses with "break-joints" can also be graded as yearling mutton if they have a sufficiently dark red color of flesh and other skeletal characteristics of yearlings. The "break-joint" of a lamb will show considerable redness in the joint, have narrow, round ribs, and considerable redness in the shank bones. The yearling will have whiter shank bones, broader and flatter ribs, and will be whiter and more brittle at the "break-joint."

B. **Procedure for U.S.D.A. Grading of Lamb Carcasses**

1. **Ideal Conformation**

   a. very wide body in relation to carcass length

   b. plumpness and fullness of muscling

   c. shortness of neck and shanks

   d. a high ratio of valuable to less valuable cuts

2. **Ideal Maturity**

   a. break-joints instead of spool joints

   b. bright pink lean color

   c. narrow ribs

3. **Ideal Fat Deposition and Firmness**

   a. numerous streaks of fat over the surface of the flank muscles

   b. extensive feathering between the ribs

   c. full and firm flank

C. **Determining the Yield Grade**

The formula for determining cutability is as follows:

YG = 1.66 - (.05 x leg conformation grade code)
+ (.25 x percent kidney and pelvic fat)
+ (6.66 x adjusted 12th rib fat thickness)

Leg conformation scores are coded as follows:

High Prime	-	15
Average Prime	-	14
Low Prime	-	13
High Choice	-	12
Average Choice	-	11

LESSON 3 EXAMINATION

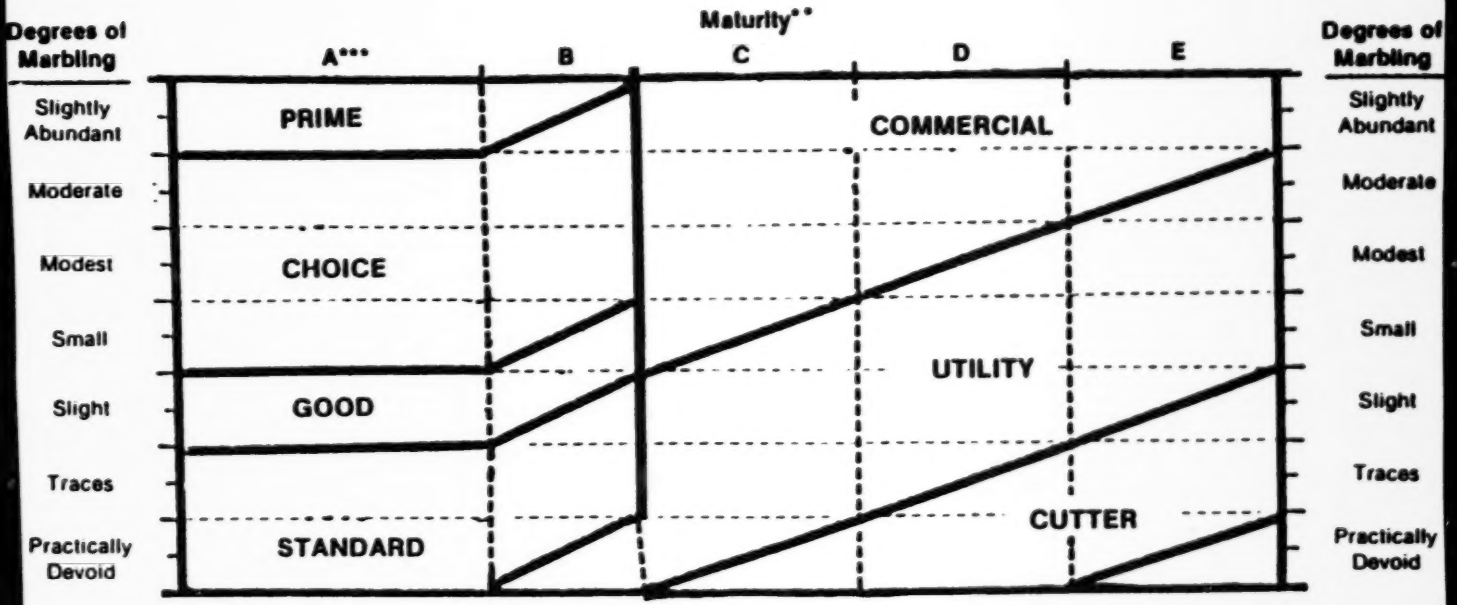
1. Using the formula,

   YG = 1.66 - (.05 x leg conformation grade code)
   + (.25 percent kidney and pelvic fat)
   + (6.66 x adjusted 12th rib fat thickness),

   determine the yield grade for a lamb with a leg conformation of 11, percent kidney and pelvic fat of 12, and a .25 rib fat thickness.

2. Explain how to differentiate lamb from mutton.

Relationship Between Marbling, Maturity, and Carcass Quality Grade*



* Assumes that firmness of lean is comparably developed with the degree of marbing and that the carcass is not a "dark cutter."

** Maturity increases from left to right (A throught E)

*** The A maturity portion of the Figure is the only portion applicable to bullock carcasses

The following chart describes the appearance of the vertebrae on carcasses of five maturity designations.

U.S.D.A. Maturity

Vertebrae	Minimum A	B	C	D	E
Sacral	distinct separation	completely fused	completely fused	completely fused	completely fused
Lumbar	no ossification	nearly completely ossified	completely ossified	completely ossified	completely ossified
Thoracic	no ossification	show some ossification	are partially ossified	show considerable ossification (outline of buttons still plainly visible)	are ossified (outline of buttons is barely visible)

Maturity and Marbling as affects Quality Grade

U.S.D.A. Grade	Maturity				
	A	A /B	B	C /C	D /E
Prime	Slightly Abundant[00]	Slightly Abundant[00]	Slightly Abundant[100]	--	--
Choice	Small[00]	Small[00]	Small[100]	--	--
Good	Slight[00]	Slight[00]	Slight[100]	--	--
Standard	Practically Devoid[00]	Practically Devoid[00]	Practically Devoid[100]	--	--
Commercial	--	--	Small[00]	Modest[00]	Moderate[00]
Utility	Devoid	Devoid	Practically Devoid[00]	Traces[00]	Slight[00]
Cutter	Devoid	Devoid	Devoid	Devoid	Practically Devoid[00]
Canner	Devoid	Devoid	Devoid	Devoid	Devoid

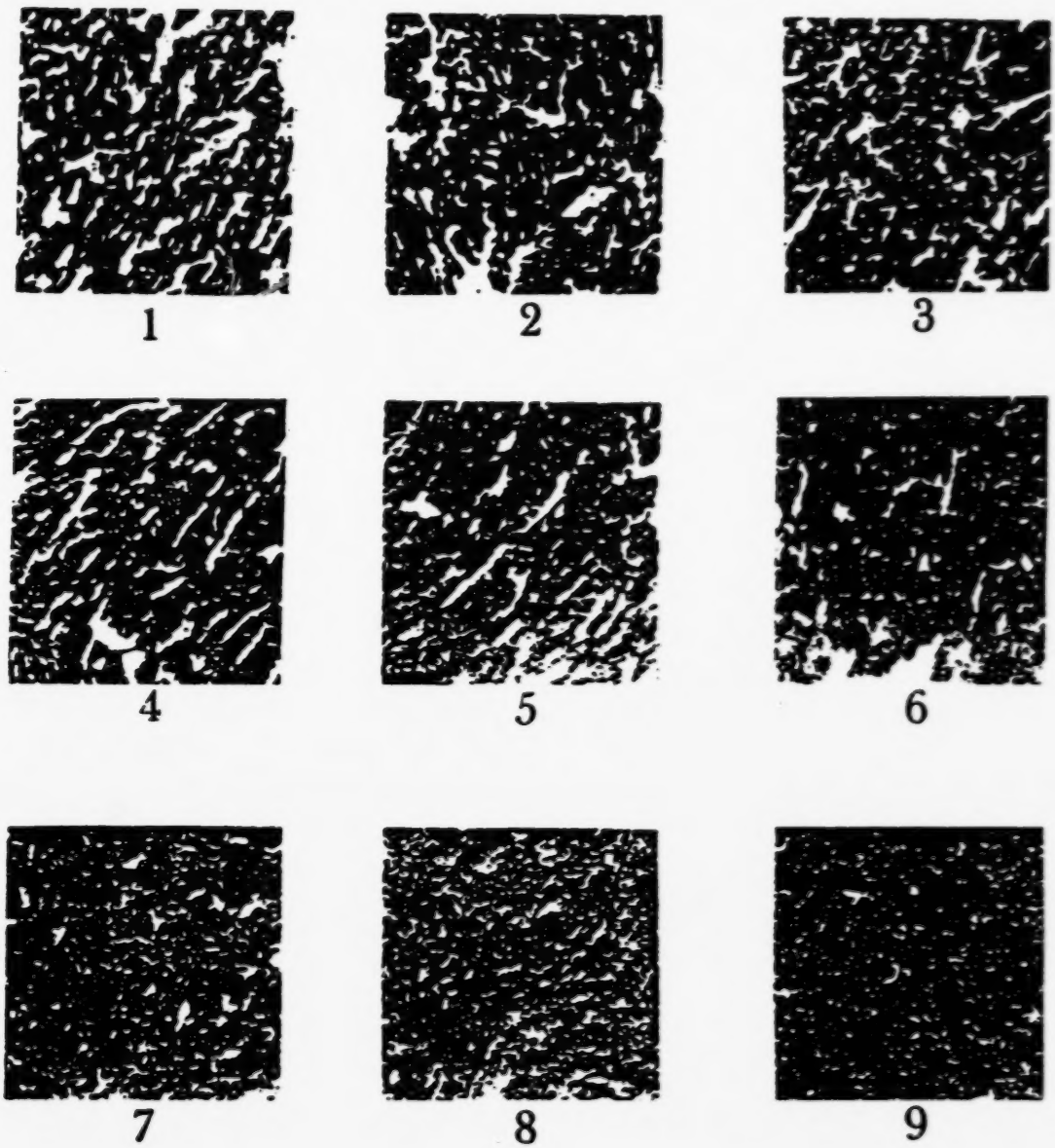
Illustrations of the Lower Limits of Certain Degrees of Typical Marbling Referred to in The Official United States Standards for Grades of Carcass Beef

1—very abundant	4—slightly abundant	7—small
2—abundant	5—moderate	8—slight
3—moderately abundant	6—modest	9—traces

(Practically devoid not shown)

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL MARKETING SERVICE
LIVESTOCK DIVISION



134d

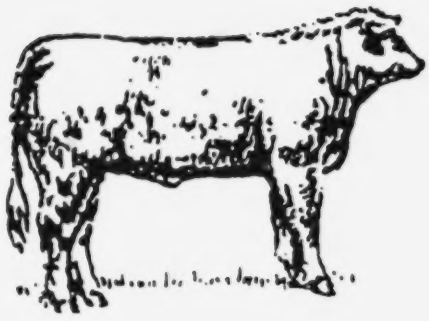
TM4

Minimum Firmness Requirements by Quality Grade

U.S.D.A. Grade	Maturity				
	A^{00}	A^{100}/B^{00}	B^{100}/C^{00}	C^{100}/D^{00}	D^{100}/E^{00}
Prime	Moderately Firm	Moderately Firm	Firm	---	---
Choice	Slightly Soft	Slightly Soft	Slightly Firm	---	---
Good	Moderately Soft	Moderately Soft	Slightly Soft	---	---
Standard	Soft	Soft	Moderately Soft	---	---
Commercial	---	---	Slightly Firm	Moderately Firm	Firm
Utility	Soft and Slightly Watery	Soft	Moderately Soft	Slightly Soft	Slightly Firm
Cutter	Very Soft and Watery	---	Soft and Watery	---	Soft and Slightly Watery

Determination of Quality Grade. There are eight quality grades for beef carcasses; quality grades are predicated upon the "expected palatability" of cooked beef from a carcass of a given U.S.D.A. grade.

■CUTABILITY GRADE FORMULA



Yield = 2.50 + 2.50T + 0.20 P t.
.0038W − .32A
T = Fat thickness of rib eye
P = Percent internal fat
W = Carcass weight
A = Area of rib eye
Drop all decimals to the right of 1. that is 2.54 = 2
3.85 = 3

Example—carcass factors are:

1. Area of rib eye = 9.0 sq. in.
   Thickness of fat = 1.0 in.
   Carcass wt. = 500 lb.
   % Interal fat = 4.5

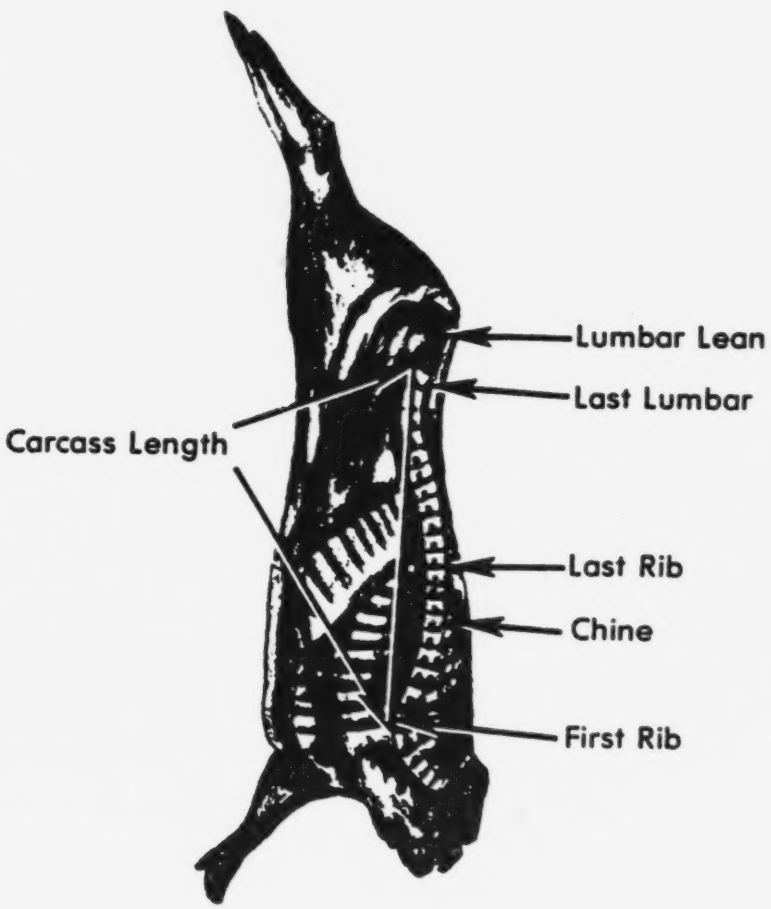
   Yield = 4.92 or 4

2. External fat = 0.3 in.
   Internal fat = 2.5%
   Carcass wt. = 500 lb.
   Rib eye area = 11.5 in.

   Yield = 1.97 or 1

Experience is the best teacher in learning cutability or yield grading

MEASURING LENGTH OF CARCASS



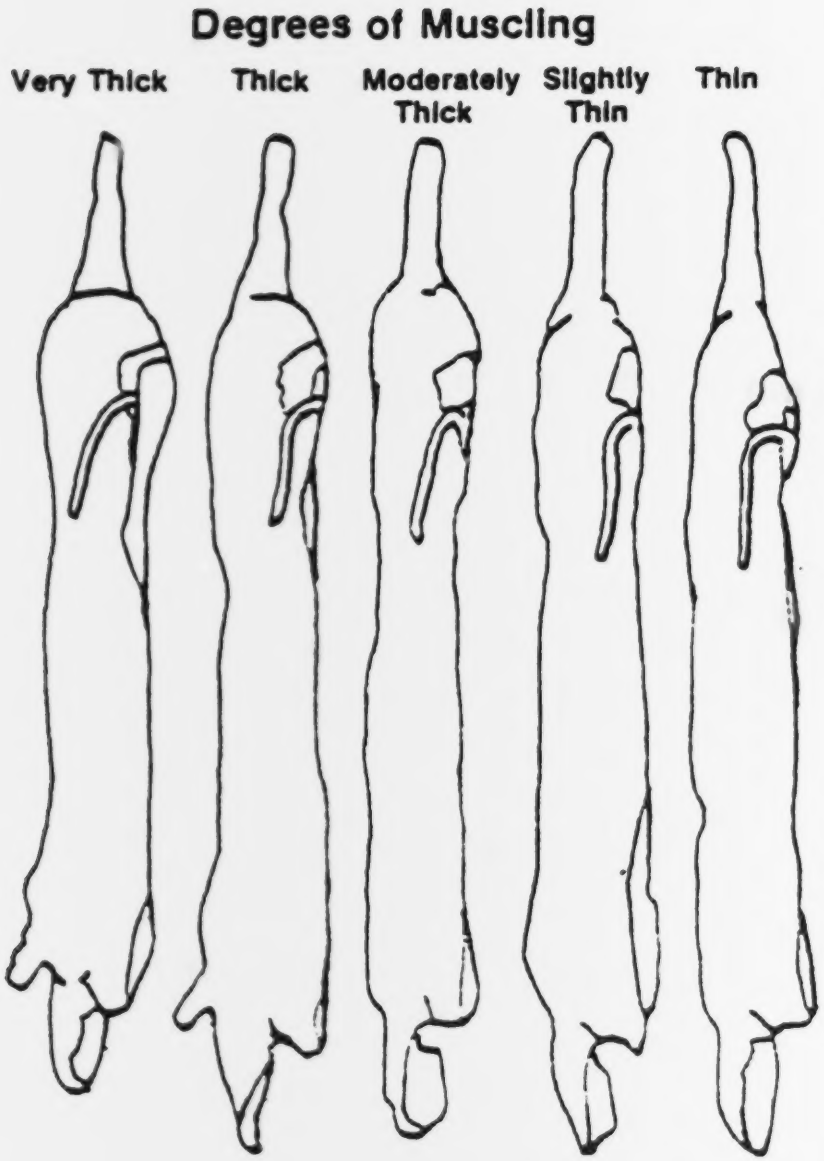
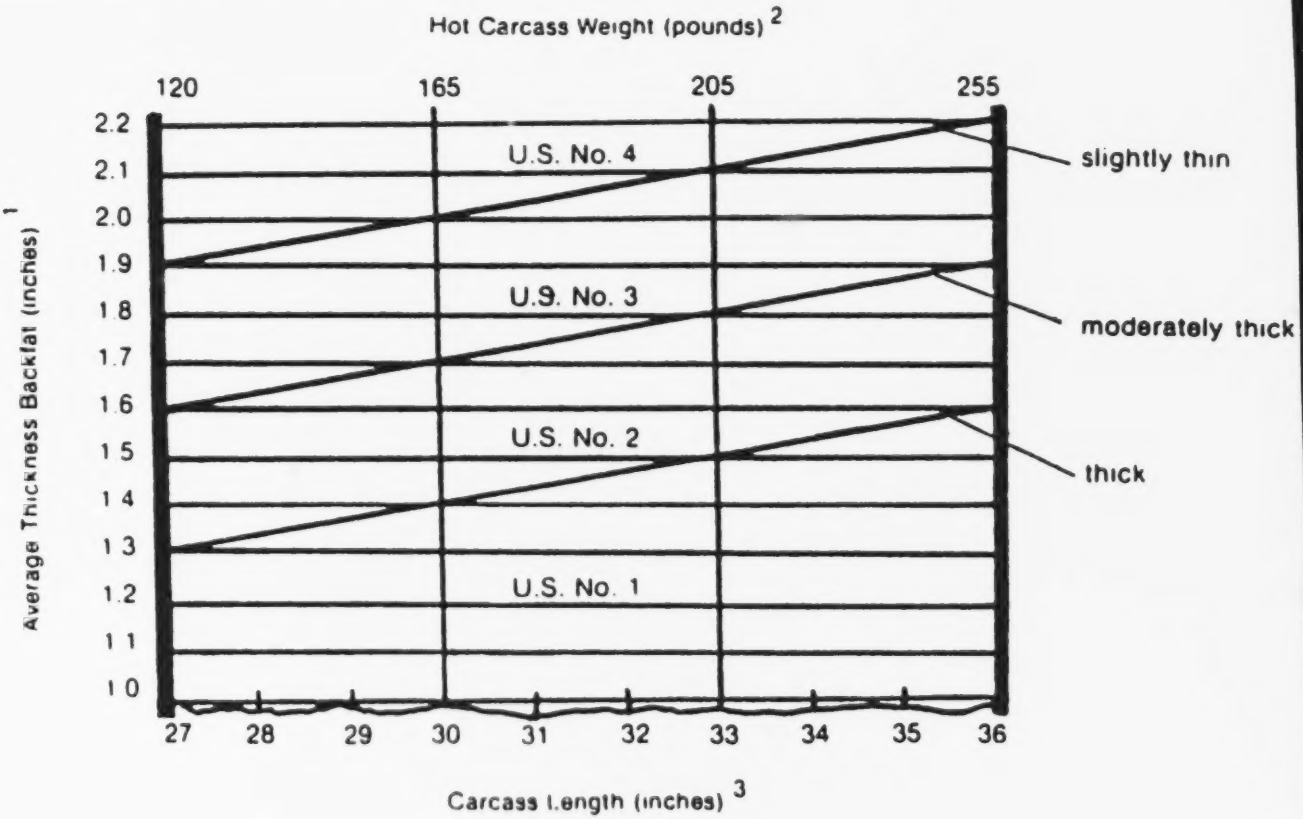


Figure 20. U.S.D.A. Muscling Scores (Very Thin not shown).

TM8

Relationship Between Average Thickness of Backfat, Carcass Length or Weight, and Grade for Carcasses with Muscling Typical of Their Degree of Fatness.



1 An average of three measurements including the skin made opposite the first and last ribs and the last lumbar vertebra. It also reflects adjustment, as appropriate, to compensate for variations from normal fat distribution

2 Carcass weight is based on a hot packer style carcass.

3 Carcass length is measured from the anterior point of the aitch bone to the anterior edge of the first rib

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT VII: Animal Slaughter

Lessons: 1 - Slaughter Procedure for Beef Cattle

2 - Slaughter Procedure for Pork

3 - Slaughter Procedure for Lamb

Lesson 1: Slaughter Procedure for Beef Cattle

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** Explain the proper procedure of beef cattle slaughter, from stunning to the chilling of the carcass after slaughter.

2. **Specific:**

a. List the accepted methods of stunning and sticking the stunned animal.

b. Explain the proper and accepted procedure for removal of the hide from the carcass.

c. Explain the proper procedure and accepted method of eviscerating the beef carcass.

d. Describe the proper procedure for caring for the beef carcass after slaughter.

B. **Review of Teaching Material**

The Meat We Eat, 11th Edition, by Romans and Ziegler, The Interstate Printers and Publishers, Inc., 1977.

C. **Materials Required**

1. Overhead projector

2. Projector screen

II. **Presentation of Lesson**

Content Outline

1. **Accepted Methods of Stunning and Sticking**

   a. The two most frequently used and commonly accepted methods of stunning the animal for sticking are as follows:

      (1) The use of a stunning gun, usually a compression powered gun or a blank bullet load powered gun.

      (2) The use of a small caliber gun with coated projectile. If uncoated lead projectile is used, the head of the animal must be rendered unfit for human consumption.

   b. The animal is stunned at one of two locations: (See TM1.)

      (1) behind the poll

      (2) on the forehead

      In each of the two locations, the brain or brain stem is jarred or injured, resulting in the stunning.

   c. Usually, the stunning operator positions himself above the animal so as to have ready access to the correct area to stun and to ensure safety to himself and others during the process.

   d. After the animal is stunned, it is preferable to hoist it by the rear legs. Chains, cables, ropes or any other practical devices can easily be attached directly above the pastern of the animal to hoist without injury to the carcass.

   e. An incision is made over the point of the brisket downward toward the jaw. A sharp knife is inserted in the incision in front of the brisket at a 45° angle, and with one smooth, deliberate cut in an upward and then downward motion, the carotid arteries and

jugular vein are severed. Avoid jabbing and excessive cutting during the sticking process so as to prevent bloody shoulders and neck.

f. If stunning and sticking are accomplished correctly, the majority of the animal's blood will be pumped from the body or will flow from the hind quarters forward by gravity to leave the carcass and enhance the quality of the carcass.

2. **The Proper and Accepted Procedure for Removal of the Hide from Carcass**

a. Generally, the hide is removed from the carcass in the following order:

(1) head

(2) shanks and legs

(3) midline and sides

(4) rump and back

b. Head--From the point on the brisket and neck where the incision was made during the sticking process, open the hide down to the lower lip. Skin out the sides of the face. Cuts should be made from the nostril to the poll around horns. After removing the hide from the head, grasp the jaw in one hand, bend the head back on its poll, and remove the head by cutting through the Adam's apple and atlas joint.

c. Shanks and legs--The animal is placed on the skinning rack with carcass balanced squarely on its back. Open the hide down the rear of each leg, continuing the cut to the midline. The midline cut is made from the sticking point on the brisket to the bung. Skin out the shanks and legs. Remove the shanks at the break joints located at the knee on front legs and at the hock on the hind legs.

d. Midline and sides--After the hide is opened from the brisket to the bung, skin each side down to the back, using long, smooth strokes with the skinning knife to avoid cutting into the side of the carcass and to avoid scoring and cutting the hide.

e. After the siding phase of the skinning process is completed, usually the brisket, sternum, and belly are opened before the carcass is raised for the rumping and back skinning process. Extreme care is taken not to allow any spillage of rumen contents or any other gastro-intestinal and/or urinary contents to contaminate the carcass. It is recommended that the esophagus be separated from the trachea and tied to prevent rumen spillage during the raising of the carcass. A weasand rod is used by some operators to separate the esophagus and trachea. This process is accomplished by inserting the rod into the esophagus, pushing contents backward while separating the trachea. The esophagus is then tied to prevent spillage.

f. Rump and back--The carcass is raised to a convenient height by using an appropriate device, generally called a beef tree, that is inserted in the hocks. Skin out the base of the tail, split the hide down the entire length of the tail, then cut the tail two joints from the body. Skin the area around the tail base, then over the rump. Care should be taken to leave the area of the rump and round smooth during the skinning process.

Before the carcass is raised completely off the skinning cradle, cut around the bung, tie it appropriately to prevent spillage, then drop it inside the carcass. Some operators place and tie over the bung a plastic bag which is big enough to cover the bung completely. This prevents any contamination of the inside carcass with manure, etc., from the bung.

To complete the skinning process, the carcass is raised off the skinning cradle and the part of the hide attached to the outside round and back is either pulled or pounded off. Minimal skinning with a knife is needed if the hide was dropped sufficiently during the siding process.

3. **The Proper and Accepted Method of Eviscerating the Beef Carcass**

a. Extreme care should be taken during the eviscerating process to prevent contamination

of the carcass by urine and fecal material. The rectum should be tied, the pizzle in male animals must be removed in a manner to preclude urine contamination, and the neck of the bladder tied or secured to prevent contamination.

b. The eviscerating process is accomplished by loosening the bung and bladder from the back bone. The intestines and paunch are easily loosened by cutting areas of attachment. Allow the intestines and paunch to drop into the gut cart, leaving the liver, heart, and lungs attached. Remove the gall bladder from the liver.

c. The organs which lie in the thoracic cavity are removed. These organs, which consist of the heart, lungs, gullet, and windpipe, are saved or processed if consumer desires; otherwise, they are discarded with the paunch and intestines.

The diaphragm muscle that separates the abdominal cavity from the thoracic cavity is left intact as much as possible. This muscle is good edible meat most frequently used for ground beef.

4. **The Proper Procedure for Caring for the Beef Carcass after Slaughter**

a. It is imperative that the carcass is chilled thoroughly during the first few hours after slaughter. Improper chilling could possibly result in spoilage of deep joints of the hip and shoulder.

b. The recommended cooler temperature for chilling room is 33° F. for warm carcasses. Care should always be taken to adjust cooler temperature according to the total cooler space and number of warm carcasses being chilled in the cooler at a given time. Warm carcasses will greatly raise cooler temperatures, resulting in an insufficient temperature for proper carcass chill.

c. After carcasses are thoroughly chilled, storage cooler temperature should be maintained at 33°-38° F.

LESSON 1 EXAMINATION

1. What are the most frequently used methods to stun beef cattle?

2. List the steps in the sticking procedure for beef cattle.

3. Explain the proper procedure for removing the hide from beef cattle.

4. Explain the accepted procedure for eviscerating the beef carcass.

5. How are beef carcasses properly handled after slaughter?

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT VII: Animal Slaughter

Lesson 2: Slaughter Procedure for Pork

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** Upon completion of this lesson, the student will be able to list, describe and/or explain the proper procedure of pork slaughter, from stunning to the chilling of the carcass after slaughter.

2. **Specific:**

a. List the accepted methods of stunning and sticking the stunned animal.

b. Explain the proper and accepted procedures for removal of the skin or hair from the carcass.

c. Explain the proper procedure and accepted method of eviscerating the pork carcass.

d. Describe the proper procedure for caring for the pork carcass after slaughter.

B. **Review of Teaching Material**

1. The Meat We Eat, 11th Edition, Romans and Ziegler, The Interstate Printers and Publishers, Inc., 1977.

C. **Materials Required**

1. Overhead Projector

2. Projector Screen

II. **Presentation of Lesson**

Content Outline

1. **Accepted Methods of Stunning and Sticking**

a. The Federal Humane Slaughter Act permits any of three methods of immobilizing livestock in the slaughter process. They are as follows:

(1) Electrical

(2) Chemical

(3) Mechanical

The act also specifies that the method used must cause complete unconsciousness without a great deal of excitement, stress or discomfort.

b. Most large packers rely upon chemical or electrical stunning methods for swine. The chemical procedure involves the use of an atmosphere composed of 70% carbon dioxide for approximately 45 seconds. The electrical stunning involves a hydraulically operated squeeze chute to hold the animal while electrical tongs or a probe is placed on the skull and 90 volts with up to 5.0 amps are delivered for 2 to 10 seconds.

c. After the animal is stunned, it is preferable to hoist by the rear legs. A six-inch sticking knife is inserted midway from the brisket to the throatlatch. Give the knife an upward thrust, dip the tip of the knife until it contacts the backbone. Bleeding of the swine is by severance of the carotid arteries and jugular veins or by cutting the anterior vena cava. It normally requires nine minutes to complete the bleeding process with a weight loss of about 3 percent. It should be noted that if the stunning to sticking interval exceeds 25 seconds, capillaries begin to rupture in some hogs, creating blood splash (ecthymosis) in muscle tissues. (See TM2.)

2. **The Proper and Accepted Procedure for Removal of the Hair or Skin.**

a. Generally, hair can be removed by:

(1) Scalding

(2) Scraping

(3) Shaving

(4) Singeing

(5) Skinning

All large pork packers and most small packers scald and dehair swine. The hand skinning process is used primarily in small plants with equipment that is too small to accomplish hair removal on large hogs and on farm slaughter.

b. Normally, scalding water temperature is 140°-142° F. The hog is dropped in scalding water until hair slips easily. This usually is accomplished in approximately 4 to 5 minutes. If excessive temperatures are maintained too long, large chunks of skin and fat are removed in the dehairing process. The hog is then scraped using bell scrapers or shaved with a sharp knife to remove remaining hair.

3. **The Proper and Accepted Method of Eviscerating the Swine Carcass**

a. Extreme care should be taken during the eviscerating process to prevent contamination of the carcass by urine or fecal material.

b. The evisceration process entails the removal of the contents of the abdominal cavity and the thoracic cavity. An incision is made from the crotch to breast, with care taken to avoid cutting the intestines. Another cut is made in the exact center between the ham, following the center of the thin white membrane which extends from the skin through the flesh between the ham to the pelvic bone. The abdominal cavity is opened and the breast bone split. The stomach, intestines, liver, and spleen are removed. The skirting around the diaphragm membrane is cut and the heart, esophagus, lungs, and trachea are removed.

4. **The Proper Procedure for Caring for the Pork Carcass after Slaughter**

a. The carcass is usually split through the center of the vertebral column with a saw or cleaver. The head is removed at the atlas joint and the leaf fat and kidneys are removed.

b. The carcass is washed thoroughly with cold water; blood clots and loosened glands are removed. The carcass is weighed, tagged, and placed in a cooler at a temperature of 28° to 34° F.

c. Pork should be processed in 12 to 24 hours, since pork is likely to deteriorate excessively during sustained storage.

LESSON 2 EXAMINATION

1. What are the most frequently used methods to stun hogs?

   a.

   b.

2. List the steps in the sticking procedure for hogs.

3. Explain the proper procedure for hair removal in hogs.

4. Explain the accepted procedure for eviscerating hogs.

5. How are hog carcasses properly handled after slaughter?

INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT VII: Animal Slaughter

Lesson 3: Slaughter Procedure for Lamb

I. **Preparation for Instruction**

A. **Student Objectives**

1. **Terminal:** Explain the proper procedure for lamb slaughter from stunning to the chilling of the carcass after slaughter.

2. **Specific:**

a. List the accepted methods of stunning and sticking the stunned animal.

b. Explain the proper and accepted procedure for removal of the hide from the carcass.

c. Explain the proper procedure and accepted method of eviscerating the lamb carcass.

d. Describe the proper procedure for caring for the lamb carcass after slaughter.

B. **Review of Teaching Material**

The Meat We Eat, 11th Edition, The Interstate Printers and Publishers, Inc., 1977.

C. **Materials Required**

1. Overhead Projector

2. Projector Screen

II. **Presentation of Lesson**

A. **Content Outline**

1. **Accepted Methods of Stunning and Sticking**

a. Of the three major methods of stunning of lambs, only two are used extensively--mechanical and electrical.

b. The mechanical method most generally used is the compression stunner. The compression

stunner has a mushroom type, nonpenetrating head that delivers a high velocity impact very effectively.

c. The electrical stunner uses an electrical current of 90 volts with 3 to 5 amps delivered for 2 to 8 seconds for effective stunning (TM3).

d. After being stunned by an approved method, the lamb may be stuck while suspended from the rail or in a cradle. In either case, hold the lamb's nose in the left hand, insert the sticking knife behind the jaw even with the base of the ear, completely through the neck. Pull the knife outward, which will cut the carotid arteries and jugular vein. The lamb should complete bleeding in 6 to 10 minutes. Blood loss will equate to approximately 5 percent of the body weight.

2. **The Proper and Accepted Procedure for Removal of the Pelt**

a. The pelting procedure can be completed either in the cradle, on the rail, or by a combination of the two. Generally, the animal is placed in the cradle. The hind and fore legs are skinned. The pelt is opened along the center line and the pelt is removed over the abdomen by "fisting."

b. Fisting is used due to the ease of separating the lamb's skin from the thin connective tissue membrane under the pelt called the "fell." Fisting, or forcing the fist between the pelt and fell, can be done to prevent damage to the pelt or appearance of the carcass.

3. **The Proper and Accepted Method of Eviscerating of the Lamb Carcass**

a. Since the throat has been cut, the esophagus should have been tied off. The evisceration process entails the removal of the contents of the abdominal and thoracic cavity.

b. A cut is made from the crotch to the breast with a knife, using care to avoid cutting the intestines. The rectum is then loosened from

the backside and pulled through the pelvic canal into the abdominal cavity. The thoracic cavity is completely opened by splitting the breast bone with a saw.

c. The stomach, intestines, liver, and spleen are loosened. Cuts are made around the skirt, through the diaphragm to remove the heart, esophagus, lungs, and trachea. The evisceration process requires care and attention not to puncture the paunch or intestines.

4. **The Proper Procedure for Caring for the Lamb Carcass after Slaughter**

a. Lamb carcasses should be trimmed to remove any pieces of adhering skin, wool, bruises, or manure. The carcass is washed with high pressure water, weighed, tagged, and chilled at 28°-32° F. for 12 to 24 hours, then stored until processing in a holding cooler at 32°-34° F.

LESSON 3 EXAMINATION

1. What are the most frequently used methods used to stun lambs?

   a.

   b.

2. List the steps in the sticking procedure for lambs.

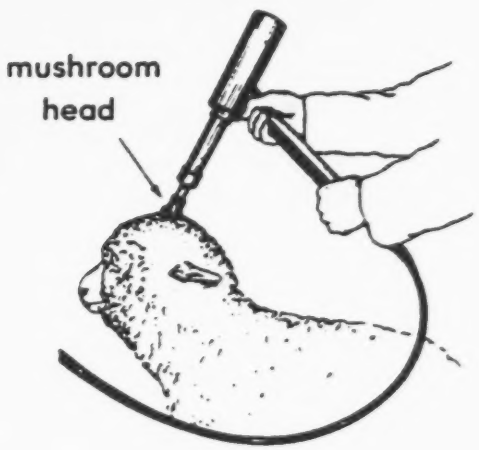
3. Explain the proper procedure for removing the pelt from lambs.

4. Explain the accepted procedure for eviscerating lamb.

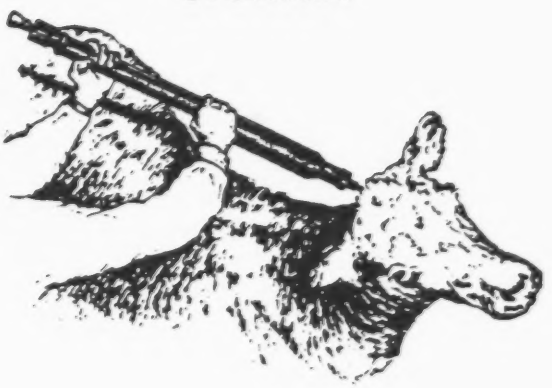
5. How are lamb carcasses properly handled after slaughter?

COMPRESSION STUNNER

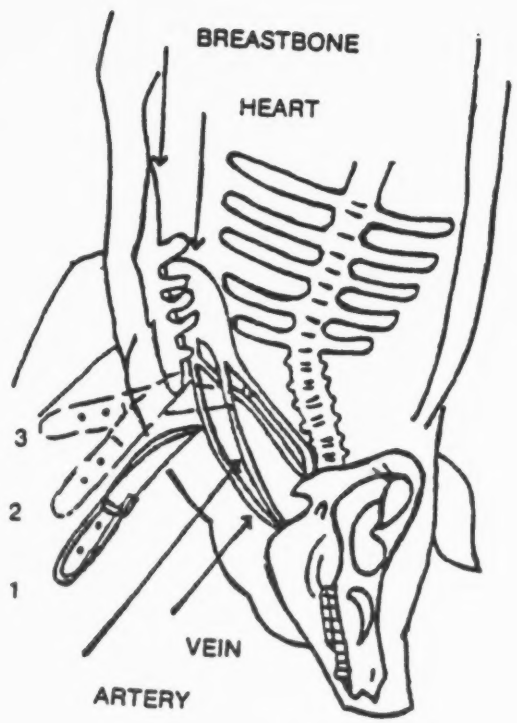
COMPRESSION STUNNER
(may be used for cattle, hogs, and sheep)

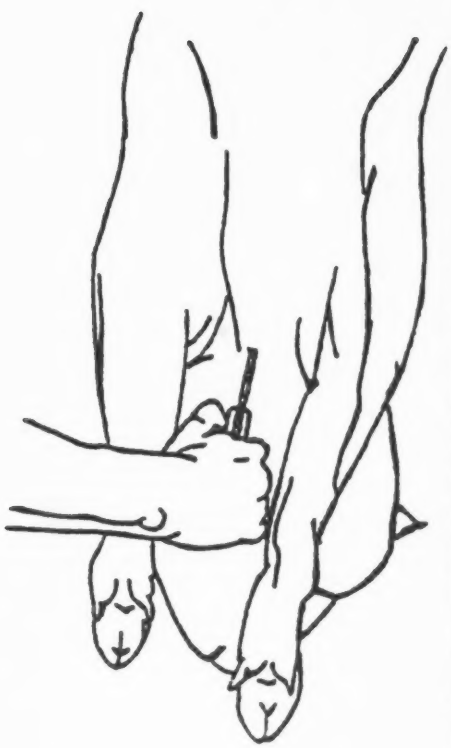


CATTLE COMPRESSION STUNNER



Proper procedure for sticking swine.





149b TM2

ELECTRIC STUNNERS

MEATS RESOURCE GUIDE

I. MEAT IDENTIFICATION

A. TEXTS

Title: Bovine Anatomy

Contents: This text enables the student to study the bovine basic "pattern" animal. 296 pages, 2nd edition (1958).

Source:
William Max McLeod
Burgess Publishing Company
7108 Ohms Lane
Minneapolis, MN 55435
612-831-1344

Title: How to Carve Meat, Game and Poultry

Contents: The book explains step by step procedures for making different cuts of meat, plus it gives lessons on the anatomy of beef, pork and lamb. There are also helpful suggestions on meat tenderizing. 209 pages.

Source:
M. O. Cullen
McGraw-Hill Book Co.
1221 Avenue of the Americas
New York, NY 10020
212-512-2000

Title: Lessons on Meat

Contents: A comprehensive four-color source book. Includes the latest research findings relative to meat's nutritive value, preferred cooking and freezing methods and buying guides. Helpful tips on meal planning, meat identification, new approved meat identification charts, carving and serving. 8 1/2" x 11". 86 pages.

Source: Agri-Farm Publications, Inc.
1019 Market Street, Box 43
Gowrie, IA 50543
515-352-3303

Title: **Meat Evaluation Handbook**

Contents: National Livestock and Meat Board. Color, texture, finish, quality, muscling, firmness, marbling, cutability, and confirmation. These are all contained in one handbook. 190 full-color photographs of beef carcasses - wholesale cuts, quality grades, yield grades; pork carcasses - cut grades; lamb carcasses - quality yield grades. 70 pages.

Source: Ohio Curriculum Material
Ohio State University
Columbus, OH 43210

Title: **Meat for the Table**

Contents: This book is an attempt to answer some of the questions asked of the author by thousands of home economics students and homemakers. It includes chapters on the economics of meat production, the meat packing industry, meat composition and nutritive value, cooking of meat, the art of carving, and pictures and diagrams of different cuts of meat. 1st edition, 240 pages.

Source: McGraw-Hill Book Co.
1221 Avenue of the Americas
New York, NY 10020
212-512-2000

Title: **Uniform Retail Meat Identity Standards**

Contents: This manual is "the" working guide for the National Meat Identity Standards Program being adopted by retailers across the nation.

The manual includes a master list of recommended retail cut names of beef, pork, lamb and veal and new labeling system for ground beef. Excellent reference source for those teaching meat identification. Comes in sturdy plastic 3-ring binder. Printed in two colors. 8-1/2" x 11". 120 pages.

Source: Agri-Farm Publications, Inc.
1019 Market Street, Box 43
Gowrie, IA 50543
515-352-3303

B. PAMPHLETS

Title: **A Hog's Not All Chops**

Contents: Informative leaflet shows how a modern-day hog yields 122 lbs. of saleable retail cuts of chops, ham, bacon, ribs and sausage, plus lard. Also includes explanation of factors involved in pork production and reasons for the "ups and downs" of pork prices. Printed in 2 colors. 3-7/8" x 8-1/2". 6 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **A Steer's Not All Steak**

Contents: This leaflet explains how a 1,000-pound steer yields only 432 pounds of retail beef cuts and how this affects the price of beef. Also includes easy-to-understand information about the supply and demand for beef. Printed in 2 colors. 4" x 8-1/2". 6 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

PAMPHLETS (Continued)

Title: **Beef Slaughtering, Cutting, Preserving, and Cooking on the Farm**

Contents: Consumer guide to slaughtering, cutting, preserving, and cooking of beef. Tips on how to cook better are included. No. F2263

Source: Office of Governmental and Public Affairs
U.S. Department of Agriculture
Washington, DC 20250

Title: **"Four Food Groups for Better Meals" Game**

Contents: This game entertains as well as educates children on the importance of the four major food groups in their diets (milk, meat, vegetable/fruit, cereal/bread). Each game includes an instruction sheet, 25 game cards for players, and a sample completed game card. Also included is a 22 x 28 inch "Daily Food Guide" which tells how many servings a person must have daily of each food group. (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **4-H Swine Project Manual - Modern Meat-Type Hogs**

Contents: A 17-page guide describing modern meat hogs yielding superior meat-type quality and finish. Included is a pork chart which shows retail cuts, where they came from, and how to cook them. Also, a breed and breed characteristics section is included, plus addresses of purebred swine associations. A small glossary of pork-related terms and three graphs are included.

Source: L.S.U. Cooperative Extension Service
Baton Rouge, LA 70803

Title: **Institutional Meat Purchase Specifications For Cured, Smoked and Full-Cooked Pork**

Contents: Contains descriptions of the various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 10 pages (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Institutional Meat Purchase Specifications For Edible By-Products**

Contents: Contains descriptions of the various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 4 pages (1970).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Institutional Meat Purchase Specifications For Fresh Pork**

Contents: Contains descriptions of various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 6 pages (1975).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

PAMPHLETS (Continued)

Title: **Institutional Meat Purchase Specifications For Fresh Veal and Calf**

Contents: Contains descriptions of the various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 8 pages (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Institutional Meat Products Specifications For Sausage Products**

Contents: Contains a description of sausage products customarily purchased by institutional users of meat in accordance with the U. S. Department of Agriculture's Meat Acceptance Service Guidelines. (1977).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Lamb Slaughtering, Cutting, Preserving and Cooking on the Farm**

Contents: Consumer guide to slaughtering, cutting, preserving and cooking of lamb. Tips on how to better prepare lamb are also included. No. F2264.

Source: Office of Governmental and Public Affairs
U.S. Department of Agriculture
Washington, DC 20250

Title: **Meat and Poultry Inspection Manual**

Contents: Discusses the trends and technology in the meat and poultry inspection spectrum.

PAMPHLETS (Continued)

Source: U.S. Superintendent of Documents
United States Department of Agriculture
Washington, DC 20402

Title: **Meat Evaluation Series**

Contents: Beef carcasses, pork carcasses and retail cuts. Set of three publications, recommended for use in preparing students for the meat judging contests. (1980)

Source: Ohio Curriculum Material
Ohio State University
Columbus, OH 43210

Title: **Meat Judging and Grading**

Contents: The brochure has 42 pages of material concerning judging of quality of meats and grading of meats.

Source: Ohio Curriculum Material
Ohio State University
Columbus, OH 43210

Title: **101 Meat Cuts**

Contents: Included in this booklet are 101 retail cuts of meat, including beef, pork, lamb, veal, and variety meats. There is a picture of each cut, plus a description of the cut and its identifying characteristics. 40 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Pork Slaughtering, Cutting, Preserving and Cooking on the Farm**

PAMPHLETS (Continued)

Contents: A 65-page booklet, including selection and care of animals before slaughter; preparing for slaughter; slaughter; chilling the carcass; cutting, freezing and frozen storage; further processing; meat cookery and precautions. (1978) No. 2265.

Source: Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

Title: **The Meat Board Guide to Identifying Meat Cuts**

Contents: Booklet provides basic information on the selection, identification, and recommended cookery method for retail meat cuts. Contains full color photographs identifying retail cuts of beef, pork, lamb, veal and variety meats. A valuable aid in teaching meat identification to high school home economics and meat science students and consumers in general. 4" x 9". 48 pages.

Source National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **The National Provisioner** (Periodical)

Content: Official information service of the American Meat Packer's Association. (1958).

Source: The National Provisioner Publishing Co.
15 West Huron St.
Chicago, IL 60610
312-944-3380

Title: **Variety Meats from the U.S.A... A Purchasing Guide**

Contents: This guide features a full-color photograph of each variety meat (liver, kidney, heart,

tongue, etc.) along with proper name, specifications and identification number similar to the IMPS/NAMP system used by the meat purveying industry. A valuable tool for both U.S. meat suppliers and foreign buyers, this guide provides minimum specifications and a system of standardized nomenclature for U.S. meats sold in foreign markets. Written in English, French and German. 8-1/2" x 11". 24 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago IL 60611
312-467-5520

C. SLIDES

Title: **Beef Cattle Publications and Visual Materials**

Contents: Lists private organizations, state beef cattle organizations, state extension services, and land-grant universities in the U.S. that have publications, visual materials or resource persons that may be consulted for information on beef cattle. (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **How to Buy Beef**

Contents: A set of 31 color slides with narrative guide. Presents a guide to buying beef by U.S.D.A. grade and by cut, and specifies which cuts are the most tender. (1973).

Source: U.S. Department of Agriculture
Photo Lab, Inc.
Washington, DC 20402

SLIDES (Continued)

Title: **Identification of Beef Cuts**

Contents: Slide set, 96 frames of wholesale and retail cuts of beef.

Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: **Identification of Kinds of Meat**

Contents: Slide Set, 33 Frames

Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: **Identification of Lamb Cuts**

Contents: Slide set, 48 frames of wholesale and retail cuts of lamb.

Source: Vocational Agriculture Service
College of Ariculture
University of Illinois
Urbana, IL 61801

Title: **Identification of Meat Cuts**

Contents: This set of 131 slides has been broken down into five categories: kinds of meat, cuts of beef, cuts of pork, cuts of veal, and cuts of lamb.

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-536-3446/1-800-558-9595

SLIDES (Continued)

Title: **Identification of Pork Cuts**

Contents: Slide set, 81 frames of wholesale and retail cuts of pork.

Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: **Identification of Retail Meat Cuts**

Contents: Slide set, 110 Frames

Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: **Lesson 1: Basic and Varied Cuts**

Contents: A general overview of the identification of the seven basic cuts of beef, lamb and pork: arm, blade, rib, loin, sirloin, round, and breast. Variety cuts include a discussion of the organ meats. Includes 30 full-color slides, a cassette tape, and script with introduction to the entire series.

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-563-3446/1-800-558-9595

Title: **Lesson 2: Beef Cuts - Wholesale and Retail**

Contents: Covers the identification of the wholesale cuts of beef and its retail cuts. Wholesale cuts include chuck, rib, loin, round, brisket, shank, plate and flank. Includes 77 full-color slides, a cassette tape, and script with introduction to the entire series.

SLIDES (Continued)

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-536-3446/1-800-558-9595

Title: **Lesson 3: Lamb Cuts - Wholesale and Retail**

Contents: Identifies the seven wholesale cuts of lamb and its retail cuts. The wholesale cuts include shoulder, rib, loin, leg, shank, breast, and flank. Includes 39 full-color slides, a cassette tape, and script with introduction to the entire series.

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-563-3446/1-800-558-9595

Title: **Lesson 4: Pork Cuts - Wholesale and Retail**

Contents: Covers how to identify the eight wholesale cuts of pork and the retail cuts. Wholesale cuts include loin, ham, spareribs, picnic shoulder, Boston shoulder, jowl, side, and neck bones. Includes 56 full-color slides, a cassette tape, and script with introduction to the entire series.

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-563-3446/1-800-558-9595

Title: **Meat Cut I.D. Slide Set**

Contents: Now you can teach meat cut identification skills whenever you want without obtaining expensive and perishable meat cuts. Photographs of 113 major wholesale and retail cuts of beef, pork, and lamb display the important identifying characteristics of each cut.

The accompanying information sheets list the most nationally accepted names, though no standards exist. All names correspond with the California Agriculture Curriculum Code list. The sheets also contain black and white reproductions of each slide, so they're an excellent reference and study guide for students.

When similar cuts of meat are difficult to identify, the accompanying text gives particular characteristics to look for, such as bone locations, distinguishing muscle groups, color differences, etc.

The complete set comes in a sturdy binder for extra protection and organization.

Source: National Ag-Ed Curriculum Materials
California Polytechnic State University
San Luis Obispo, CA 93407

Title: **Meat Identification Slide Set**

Contents: Full color slides (136) identifying retail cuts of beef, pork, lamb, veal and variety meats as listed in the Uniform Retail Meat Identity Standards. A valuable aid in teaching meat identification to high school home economics and college meat science students.

Source: Agri-Farm Publications, Inc.
1019 Market Street, Box 43
Gowrie, IA 50543
515-352-3303

Title: **Retail Cuts**

Contents: This set of 95 color slides is based on the latest national F.F.A. Contest Scorecard for meat identification. There is one slide for each of the 95 cuts on the scorecard. Most slides have a ruler by the cut to aid in cut size visualization.

SLIDES (Continued)

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-563-3446/1-800-558-9595

Title: **Sheep Publications and Visual Materials**

Contents: Lists private organizations, state sheep organizations, state extension services and land-grant universities in the U. S. that have publications, visual materials or resource persons that may be consulted for information on sheep. (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Swine Publications and Visual Materials**

Contents: Lists private organizations, state swine organizations, state extension service and land-grant universities in the U. S. that have publications, visual materials, or resource persons that may be consulted for information on swine. (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

D. FILMSTRIPS

Title: **Beef Cattle Publications and Visual Materials**

Contents: Lists private organizations, state beef cattle organizations, state extension services and land-grant universities in the U.S. that have publications, visual materials, or resource persons that may be consulted for information on beef cattle. (1980).

FILMSTRIPS (Continued)

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Identification of Beef Cuts

Contents: This 96-frame color filmstrip illustrates the different cuts of beef. Useful information is given to aid in identification of beef cuts.

Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: Identification of Kinds of Meat

Contents: This 33-frame color filmstrip discusses differences between beef, pork, lamb, and veal. The filmstrip helps in the identification of meat by species.

Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: Identification of Lamb Cuts

Contents: This 48-frame color filmstrip illustrates the different lamb cuts. Useful information is given to aid in identification of lamb cuts.

Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

FILMSTRIPS (Continued)

Title: **Identification of Pork Cuts**

Contents: This 81-frame color filmstrip illustrates the different cuts of pork. Useful information is given to aid in identification of pork cuts.

Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: **Identification of Retail Meat Cuts**

Contents: Slidefilm, 110 frames of retail cuts of beef, pork, and lamb.

Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: **Sheep Publications and Visual Materials**

Contents: Lists private organizations, state sheep organizations, state extension services and land-grant universities in the U. S. that have publications, visual materials or resource persons that may be consulted for information on sheep. (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Swine Publications and Visual Materials**

Contents: Lists private organizations, state swine organizations, state extension service and land-grant universities in the U. S. that have publications, visual materials or resource persons that may be consulted for information on swine. (1980).

FILMSTRIPS (Continued)

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

E. CHARTS

Title: **Be a Smarter Meat Shopper**

Contents: Booklet designed to answer questions frequently asked at the meat counter. Explains retail cut labeling, provides illustrated charts for beef, pork, lamb and veal. Also includes information on ground beef and ground pork; inspection and grading; buying; storage; and has a complete description of cookery methods, including microwaving meats. Printed in two colors. 5-1/2" x 7-1/2".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Beef Buyer's Guide**

Contents: Handy pocket- or purse-size slide rule calculator helps shoppers make the most of their beef dollar. Converts price per pound to cost per serving and contains beef identification chart, food buying tips for shoppers, and description of the basic beef cookery methods. Printed in full color. 3-7/8" x 9".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Beef Cattle Publications and Visual Materials**

CHARTS (Continued)

Contents: Lists private organizations, state beef cattle organizations, state extension services and land-grant universities in the U. S. that have publications, visual materials or resource persons that may be consulted for information on beef cattle. (1980).

Source:
Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Beef Chart Wholesale and Retail Cuts

Contents: This chart illustrates the wholesale and retail cuts of beef and the percentage of each by carcass weight.

Source:
U. S. Department of Agriculture
Agricultural Marketing Service
Livestock Division
Washington, DC 20402

Title: Beef Cuts

Contents: Wall chart with full-color photographs of retail beef cuts categorized according to primal cut sources. Chart is based on the Beef Cuts chart in the booklet "Basics About Beef." 24" x 36".

Source:
National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Bone Shapes - Pork Cuts

Contents: Two-sided wall chart depicts the primal (wholesale) and retail cuts of pork. Shape of the bone which characterizes each retail cut is highlighted. Reverse side illustrates

the label, inspection mark and the cost-preserving formula. Printed in two colors. 18" x 24".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL. 60611
312-467-5520

Title: Bone Structure Charts

Contents: Individual notebook-size bone structure charts of beef, lamb, pork and veal. Designed so carcasses can be marked off to show location of wholesale and retail cuts.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago. IL 60611
312-467-5520

Title: Foodservice Cuts of Beef Notebook Chart

Contents: A practical chart for everyone connected with the foodservice industry. Can be used by purveyors, educators, students and salesmen. Lists 22 beef cuts properly identified by their NAMP IMPS numbers. Printed in full color. 8-1/2" x 11".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Foodservice Cuts of Beef Wall Chart

Contents: A practical chart for everyone connected with the foodservice industry. Can be used by purveyors, educators, students and salesmen. Lists 22 beef cuts properly identified by their NAMP IMPS numbers. Printed in full color. 8-1/2" x 11".

CHARTS (Continued)

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Foodservice Cuts of Pork Notebook Chart**

Contents: Four-color notebook version of "Foodservice Cuts of Pork" Foodservice Wall Chart. Designed for inclusion in student notebook. Lists 20 pork cuts properly identified by their NAMP IMPS number. Printed in full color. 8-1/2" x 11.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Foodservice Cuts of Pork Wall Chart**

Contents: The only chart of its kind for the foodservice industry, showing and identifying 20 pork cuts by name and NAMP IMPS number. Useful in foodservice operations, training programs and classrooms. Printed in full color on heavy varnished paper. 24" x 36".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **"Four Food Groups for Better Meals" Game**

Contents: This game entertains as well as educates children on the importance of the four major food groups in their diets (milk, meat, vegetables/fruit, cereal/bread). Each game includes an instruction sheet, 25 game cards for players, and a sample completed game card. Also included is a 22 x 28 inch "Daily Food Guide" which tells how many servings a

person must have daily of each food group. (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **4-H Swine Project Manual-Modern Meat-Type Hog**

Contents: A 17-page guide describing modern meat hogs yielding superior meat-type quality and finish. Included is a pork chart which shows retail cuts, where they came from and how to cook them. Also, a breed and breed characteristics section is included, plus addresses of purebred swine associations. A small glossary of pork-related terms and three statistical graphs are included.

Source: L.S.U. Cooperative Extension Service
Baton Rouge, LA 70803

Title: **Lamb Chart**

Contents: This chart illustrates the wholesale and retail cuts of beef and percentage of each by carcass weight.

Source: United States Department of Agriculture
Agricultural Marketing Service
Livestock Division
Washington, DC 20402

Title: **National Livestock and Meat Board (Chart)**

Contents: Individual charts showing wholesale and retail cuts of beef, pork, lamb and veal. Set of four 25" x 33" charts. Set of four 8-1/2" x 11" charts.

Source: Ohio Curriculum Material
Ohio State University
Columbus, OH 43210

CHARTS (Continued)

Title: **Notebook Charts: Beef, Pork, Lamb and Veal**

Contents: Three-color miniature versions of beef, pork, lamb and veal wall charts described above, suitable for inclusion in student notebooks. 8-1/2" x 11".

Source: Agri-Farm Publications, Inc.
1019 Market Street, Box 43
Gowrie, IA 50543
515-352-3303

Title: **Pork Buyer's Guide**

Contents: Handy pocket- or purse-size slide rule calculator helps shoppers make the most of their pork dollar. Converts price per pound to cost per serving and contains pork identification chart, food buying tips for shoppers and description of the six basic cookery methods. Printed in full color. 3-7/8" x 9".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Pork Chart**

Contents: This chart illustrates the wholesale and retail cuts of beef and percentage of each by carcass weight.

Source: United States Department of Agriculture
Agricultural Marketing Service
Livestock Division
Washington, DC 20402

Title: **Sheep Publications and Visual Materials**

Contents: Lists private oranizations, state sheep organizations, state extension services and

land-grant universities in the U. S. that have publications, visual materials or resource persons that may be consulted for information on sheep. (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Swine Publications and Visual Materials**

Contents: Lists private organizations, state swine organizations, state extension service and land-grant universities in the U. S. that have publications, visual materials, or resource persons that may be consulted for information on swine. (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Wall Charts: Beef, 06-501, Pork 06-502, Lamb 06-503, Veal 06-504**

Contents: Individual wall charts showing wholesale and retail cuts of beef, pork, lamb and veal. Each retail cut is named in accordance with the Uniform Retail Meat Identity Standards Program. Charts also give correct cookery methods for each cut pictured. Meat cut printed in red on vivid yellow background. Order by name and code. 25" x 33".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

II. PURCHASING OF MEAT

A. TEXTS

Title: **Consumers All: Yearbook of Agriculture, 1965**

Contents: Tells many things about buying, using, or making food, clothing, household furnishings, and equipment; managing money; caring for yards, gardens, and houses; bettering communities; using leisure time; and staying healthy. 512 pages (1965).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Lessons on Meat**

Contents: A comprehensive four-color source book. Includes the latest research findings relative to meat's nutritive value, preferred cooking and freezing methods and buying guides. Helpful tips on meal planning, meat identification, new approved meat identification charts, carving and serving. 8-1/2" x 11". 86 pages.

Source: Agri-Farm Publications, Inc.
1019 Market Street, Box 43
Gowrie, IA 50543
515-352-3303

Title: **Meat and Meat Foods**

Contents: The purpose of this book is to explain in nontechnical language the processes that bring meats and meat products into the consumer's kitchen in sanitary and appetizing condition and which have made meat one of the safest as well as the most nutritious of foods. 218 pages.

Source: Lloyd B. Jensen
Ronald Press Co.
605 Third Ave.
New York, NY 10158
212-850-6418

Title: **Meat in the Foodservice Industry**

Contents: Written for the newcomer to the foodservice industry, this 80-page hard cover book is also a must for advanced foodservice students, salesmen, purveyors, foodservice employees with some experience and operators who want to build and improve their business. Covers basic meat information, its purchasing, buying, receiving and storing as well as large quantity cookery equipment, meat cooking methods and timetables. Printed partially in full color. 8-3/4" x 11-1/4". 80 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Meat, Poultry and Seafood Technology**

Contents: This text has been assembled after many years of accumulating facts and preparing them for use by the student. Special care has been taken to provide practical information for those interested in food selection, processing, preparation, preservation and serving of meat. 276 pages (1978).

Source: Robert L. Henrickson
Prentice-Hall, Inc.
Englewood Cliffs, NJ 07632
201-592-2000/1-800-624-0024

Title: **Meat Science**

Contents: In this 3rd edition, the author has included three chapters on storage and preservation of meat plus a chapter on meat nutrition. 451 pages (1979).

Source: R. A. Lawrie
Pergamon Press
Maxwell House
Fairview Park
Elmsford, NY 10523
914-592-7700

Title: **Processed Meats**

Contents: This book was written to serve as a text and reference for advanced undergraduate and graduate students enrolled in meat processing courses. The emphasis of the book is on sausages, smoked meats, and meat canning. 348 pages (1973).

Source: W. E. Kramlich and F. W. Tauber
AVI Publishing Co.
250 Post Rd. East, P. O. Box 831
Westport, CT 06881
203-226-0738

Title: **The Meat We Eat**

Contents: Information about slaughter, meat identification, preparation and evaluation of meats. 11th Edition (1977).

Source: Romans and Ziegler
The Interstate Printers
and Publishers, Inc.
19-27 N. Jackson Street
Danville, IL 61832-0594
203-226-0738

Title: **Yellow Pages**

Contents: Answers to predictable questions consumers ask about meat, including nutrition of meat.

TEXTS (Continued)

Source: American Meat Institute Foundation
Trade Distributor: Reinhold
Publishing Corp.
135 W. 50th St.
New York, NY 10020
212-265-8700

B. PAMPHLETS

Title: **And the Winner Is... Ground Beef**

Contents: This new six-page folder, designed for junior high school home economics or consumer education students, covers all aspects of buying, storage, cookery and nutritive value of ground beef. Consumer buying principles are emphasized. Quantity orders will include a teacher's guide and printed originals (for making quantity copies of student worksheets). Printed in full color. 8-1/2" x 11". 6 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Basics About Beef**

Contents: A colorful booklet for senior high, consumer and home economics students, which covers all aspects of buying, storing, preparing and serving beef. A variety of word puzzles are designed to arouse student interest, reinforce the information and serve as a means of review. SCHOOL USE OF THIS BOOKLET IS RESTRICTED TO GRADES 10 THROUGH 12 ONLY. Printed in full color. 8-1/2" x 11". 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Beef and Veal in Family Meals: A Guide for Consumers**

Contents: Buying guide for consumers trying to stay within their beef budget.

Source: Office of Governmental and Public Affairs
U. S. Department of Agriculture
Washington, DC 20250

Title: **Beef Buying Basics**

Contents: This audio-visual kit familiarizes students with the basic cuts of beef and their relation to tenderness and cooking methods.

In the filmstrip, "Family Hero," the main character, 17-year-old Steve, is given the responsibility for shopping for food for his dad and sister during his mother's absence. Coincidentally, his "home economics" teacher is covering a meat unit. Steve becomes the star pupil as he applies what he learns in class at the supermarket. For senior high students.

- Color filmstrip - "Family Hero" - 100 frames, 16 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - "Beef Cuts" - 24" x 36", full color
- Adapter Forms - for class activities, using the "Beef Cuts" poster
- Student Booklet - "Basics About Beef" - 16 pages, one copy
- Printed Originals (for making quantity copies of student worksheets), two copies

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Buying Food: A Guide for Calculating Amounts to Buy and Comparing Costs in Household Quantities**

Contents: Guide helps family food buyers plan food purchases so leftovers - and costs - are kept to a minimum. An "amount to buy" factor is supplied for each of 727 different foods. The "amount to buy" factor can also be used to compare costs per serving. 71 pages (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Facts About Beef**

Contents: Full-color folder gives latest information on beef selection, storage, freezing, cooking, carving and nutritive value. Six cookery methods colorfully pictured. Beef cooking timetables are included. Nutrients supplied by two beef servings daily are graphically portrayed, along with percentages of daily recommended allowances of 10 nutrients supplied by a three-ounce serving of beef. 3-5/8" x 9". 10 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Focus On Pork**

Contents: Designed for junior high consumer and home economics students. This colorful booklet covers all aspects of buying, storing, preparing and serving pork and pork products. Several word games included throughout the book will arouse student interest, reinforce learning, and serve as a means of review. Printed in full color. 8-1/2" x 11". 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Getting the Most from Freezer Beef**

Contents: Comprehensive consumer guide to buying beef in quantity. Includes information on storage time, wrapping, cut selection, how to calculate costs, grading and other related subjects. Printed in two colors. 3-7/8" x 8-1/2". 12 pages.

Source: National Livestock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Guide to Budgeting for the Family**

Contents: An illustrated guide to buying, storing, and cooking for the family. It includes recipes for main dishes and money-saving tips. 14 pages (1976).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **How to Buy Beef Roasts**

Contents: Contains consumer information on the purchasing of meats and roasts. 15 pages (1977).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **How to Buy Food: Lesson Aids for Teachers**

Contents: These lesson aids can be used in home economics or consumer education courses. Each of the first six lesson aids covers a major food category. The seventh aid, "More for your Money," talks about smart buying in all categories. 52 pages (1975).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **How to Buy Meat for your Freezer**

Contents: Describes how to most economically purchase meats for storage in the freezer. 27 pages (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **How to Buy Meat, Poultry, and Dairy Products**

Contents: Contains consumer information on the purchase of meats and dairy products. Eight books, sold as a set (1982).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **How to Get the Most for Your Pork Dollar**

Contents: Consumer folder explains how to save money with pork by purchasing wholesale cuts like smoked ham, blade Boston (butt) shoulder and whole pork loin. Includes "hands-on" cutting instructions with illustrations for at-home preparation. Printed in 2 colors. 3-5/8" x 9". 10 pages.

PAMPHLETS (Continued)

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Institutional Meat Purchase Specifications for Cured, Smoked, and Fully-Cooked Pork**

Contents: Contains descriptions of the various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 10 pages (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Institutional Meat Purchase Specifications for Edible By-Products**

Contents: Contains descriptions of the various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 4 pages (1970).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Institutional Meat Purchase Specifications for Fresh Pork**

Contents: Contains descriptions of various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 6 pages (1975).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Institutional Meat Purchase Specifications for Fresh Veal and Calf**

Contents: Contains descriptions of the various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 8 pages (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Lamb in Family Meals**

Contents: An illustrated guide to buying, storing, and cooking. Includes recipes using the particular product. 24 pages (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Lamb in Family Meals: A Guide for Consumers**

Contents: Tells how to identify lamb cuts in the market and provides tips on how to select good quality lamb, how to estimate the right quantity to buy and how to store it properly. Also included are directions and timetables for cooking lamb, as well as recipes featuring lamb as a main dish. 21 pages (1982).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Pork in Family Meals: A Guide for Consumers**

Contents: Tells how to identify fresh and cured pork cuts in the market and provides tips on how to select good quality pork, how to estimate the right quantity to buy, and how to store it properly. Also includes directions and timetables for cooking pork, as well as recipes featuring pork as a main dish. 33 pages (1982).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Pork on A Budget**

Contents: Eighteen economical and delicious pork recipes are featured in this full-color booklet to help consumers meet the challenge of stretching their food dollar. Included are smart shopping tips and important nutrition information. Printed in full color. 5-1/2" x 7-5/8". 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Pork Slaughtering, Cutting, Preserving and Cooking on the Farm**

Contents: A 65-page booklet, including selection and care of animals before slaughter; preparing for slaughter; slaughter; chilling the carcass; cutting, freezing and frozen storage; further processing; meat cookery and precautions. (1978) No. 2265.

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **The Art of Selecting Cuts of Pork**

Contents: This audio-visual kit on pork helps home economics and consumer students understand basic principles of selecting and storing the many varied cuts of pork and processed pork products. In the filmstrip, "Glaze on Pork," a reporter for a gourmet food magazine visits Mr. Pigg's cooking school.

Through interaction with Mr. Pigg and his students, she learns about where cuts come from, how to use the package label to select pork cuts and determine best buys and how to store fresh processed pork products. All characters are animals drawn in cartoon style. The kit is a sequel to "Campaigning for Nutrient Density," but can be used alone.

- Color Filmstrip - "Glaze on Pork" - 106 Frames, 13-1/2 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - 18" x 24", 2-color
- Student Booklet - "Focus on Pork" - 16 pages, one copy
- Printed Originals (for making quantity copies of student worksheets), two copies

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Variety Meats**

Contents: Main dish recipes are featured for beef, veal, pork and lamb variety meats. Includes buying and preparation guide; lists nutritional values of each variety meat. Printed in 2 colors. 3-3/4" x 8-1/2". 12 pages.

PAMPHLETS (Continued)

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Your Money's Worth in Foods**

Contents: Teaches consumers to sharpen food shopping skills and cut food costs. Includes tables and charts that a highly motivated cost-cutter can use to find the best buys. 28 pages (1982).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

C. FILMSTRIPS

Title: **Beef Buying Guide**

Contents: This audio-visual kit familiarizes students with the basic cuts of beef and their relation to tenderness and cooking methods. In the filmstrip, "Family Hero," the main character, 17-year-old Steve, is given the responsibility for shopping for food for his dad and sister during his mother's absence. Coincidentally, his "home economics" teacher is covering a meat unit. Steve becomes the star pupil as he applies what he learns in class at the supermarket. For senior high students.

- Color Filmstrip - "Family Hero" - 100 Frames, 16 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - "Beef Cuts" - 24" x 36", full color
- Adapter Forms - for class activities using the "Beef Cuts" poster
- Student Booklet - "Basics About Beef" - 16 pages, one copy

- Printed Originals (for making quantity copies of student worksheets), two copies

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **The Art of Selecting Cuts of Pork**

Contents: This audio-visual kit on pork helps home economics and consumer students understand basic principles of selecting and storing the many varied cuts of pork and processed pork products. In the filmstrip "Glaze on Pork," a reporter for a gourmet food magazine visits Mr. Pigg's cooking school.

Through interaction with Mr. Pigg and his students, she learns about where cuts come from, how to use the package label to select pork cuts and determine best buys and how to store fresh processed pork products. All characters are animals drawn in cartoon style. The kit is a sequel to "Campaigning for Nutrient Density," but can be used alone.

- Color Filmstrip - "Glaze on Pork" - 106 Frames, 13-1/2 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - 18" x 24", 2-color
- Student Booklet - "Focus on Pork" - 16 pages, one copy
- Printed Originals (for making quantity copies of student worksheets), two copies

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

D. CHARTS

Title: **How to Buy Food**

Contents: Set of 6 posters, 10" x 15" (1976).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Your Money's Worth in Foods**

Contents: Teaches consumers to sharpen food shopping skills and cut food costs. Includes tables and charts that a highly motivated costs cutter can use to find the best buys. 28 pages (1982).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

III. NUTRITION OF MEATS

A. TEXTS

Title: Lessons On Meat

Contents: A comprehensive four-color source book. Includes the latest research findings relative to meat's nutritive value, preferred cooking and freezing methods and buying guides. Helpful tips on meal planning, meat identification, new approved meat identification charts, carving and serving. 8-1/2" x 11". 86 pages.

Source: Agri-Farm Publications, Inc.
1019 Market Street, Box 43
Gowrie, IA 50543
515-352-3303

Title: Menu Planning Guide for School Food Service

Contents: Contains information on nutrition and meal planning for school food services. 97 pages.

Source: Superintendent of Documents
Government Printing Office
Washington, DC 20402

Title: The Meat We Eat

Contents: Information about slaughter, meat identification, preparation and evaluation of meat. 11th Edition (1977).

Source: Romans and Ziegler
The Interstate Printers
and Publishers, Inc.
19-27 N. Jackson St.
Danville, IL 61832-0594
217-446-0500

Title: The Science of Meat and Meat Products

Contents: This text includes nutrient content and value of meat and meat products, meat preservation,

curing, packaging, and by-products of meat. The first part of the book is devoted to the science of meat; the second, to meat processing. 438 pages.

Source: American Meat Institute Foundation
Trade Distributor: Reinhold Publishing Corp.
135 W. 50th St.
New York, NY 10020
212-265-8700

Title: **The Nutritive Value of Cooked Meats**

Contents: This bulletin reports the results of analysis of common retail cuts of meat cooked by usual household methods. The different portions of each cut were analyzed separately and the three portions constitute the total potentially edible meat. This bulletin concentrates on the methods of cutting and selecting meats and the nutritive value of each selection and cut. 90 pages, No. MP-49.

Source: Ruth M. Leverton
Oklahoma Agricultural Experiment Station
Stillwater, OK 74075

Title: **The Vitamin Content of Meat**

Contents: The aim of this book is to summarize the available information on the nutritive value of meat and meat products. Individual chapters are devoted to the more important nutrients. Sufficient fundamental information is supplied in each case so that the value of meat in meeting the requirements of these nutrients can be considered in light of the most recent developments. 210 pages.

Source: Harry A. Waisman
Burgess Publishing Company
7108 Ohms Lane
Minneapolis, MN 55435
612-831-1344

TEXTS (Continued)

Title: **What's to Eat? Yearbook of Agriculture, 1979**

Contents: This publication, designed and written exclusively for children, features stories, games, jokes, craft projects, recipes, and fun facts. The target age group is 8-13. Parents, teachers, and librarians will find this edition of the Yearbook an ideal way for kids to learn about the food network and discover the connection between good nutrition and good health. 142 pages (1979).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Yellow Pages**

Contents: Answers to predictable questions consumers ask about meat, including nutrition of meats.

Source: American Meat Institute
Trade Distributor: Reinhold Publishing Corp.
135 W. 50th St.
New York, NY 10020
212-265-8700

B. PAMPHLETS

Title: **And the Winner Is... Ground Beef**

Contents: This new six-page folder, designed for junior high school home economics or consumer education students, covers all aspects of buying, storage, cooking and nutritive value of ground beef. Consumer buying principles are emphasized. Quantity orders will include a teacher's guide and printed originals (for making quantity copies of student worksheets). Printed in full color. 8-1/2" x 11". 6 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Beef: A New Look at its Nutritive Value**

Contents: Describes the new nutrient data for beef as a result of recent nutrient analysis. The information updates the existing 25-year-old beef nutrient data base. The publication points out the nutrient contributions beef makes to a balanced diet and also discusses the fat and cholesterol content of beef. 4 pages printed in 4 colors. 8-1/2" x 11".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Calorie-Conscious Pork Recipes**

Contents: Guide to making pork an important part of a dietary fitness plan. Features 10 tasty calorie-controlled pork recipes and important information on nutrition, dieting, and exercise. Calories calculated for each recipe. Printed in full color. 3-3/4" x 8-1/2". 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Composition of Foods: Sausage and Luncheon Meats, Raw, Processed, Prepared**

Contents: Each page presents the nutrient profile of a single food item, given on the 100-gram food basis in common measure, and in the edible portion of one pound as purchased. Values

are provided for refuse, energy, proximate composition, 7 mineral elements, 9 vitamins, individual fatty acids, cholesterol, total phytosteroids and 18 amino acids. 92 pages (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Conserving the Nutritive Values in Foods**

Contents: Calls attention to some of the important nutrients in foods that are affected by different practices of handling and preparation and suggested ways these nutrients can best be conserved in the home. 11 pages (1983).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Exploring the Known... Meat, Diet, and Health**

Contents: Much is known about four of the nation's most pressing health concerns - heart disease, cancer, hypertension, and obesity. But even at our current level of knowledge, there is still much information that is unknown, including meat's possible role in the development or even prevention of these diseases. This publication takes an in-depth look at what we know about meat and its possible relationship with these health concerns. 5-1/2" x 8-1/2". Printed in full color. 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Facts About Beef**

Contents: Full-color folder gives latest information on beef selection, storage, freezing, cooking, carving, and nutritive value. Six cookery methods colorfully pictured. Beef cooking timetables are included. Nutrients supplied by two beef servings a day are graphically portrayed, along with percentages of daily recommended allowances of 10 nutrients supplied by a three ounce serving of beef. 3-5/8" x 9", 10 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Facts About Pork**

Contents: Up-to-the-minute facts about pork variety, selection, storage, freezing and defrosting, cookery, carving, and nutritive value are presented in this folder. Pork cookery methods are illustrated; timetables are given for roasting, broiling, braising and cooking in liquid. Graphs tell story of pork in relation to daily nutrient needs. Printed in full color. 3-5/8" x 9". 12 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Facts About Sausage**

Contents: Being an educated sausage consumer will be easier with this new consumer brochure. Up-to-the-minute information on ingredients, processing, and nutrition are included. An easy-to-follow identification key to the various types of sausage is also pictured. Printed in full color. 3-5/8" x 9". 12 pages.

PAMPHLETS (Continued)

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Family Fare: A Guide to Good Nutrition**

Contents: This handy booklet tells you how to get the nutrients you need from a variety of foods, provides tips on meal planning, and offers menu suggestions. Included is a daily food guide that sorts food into four groups on the basis of their similarity in nutrient content. The guide will help you to plan meals that include family favorites, foods in season, and foods to fit the family budget. 91 pages (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Food: A Publication on Food and Nutrition by United States Department of Agriculture**

Contents: Contains a hassle-free guide to a better diet; breakfast and snacking ideas; and recipes. 64 pages (1979).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **"Four Food Groups for Better Meals" Game**

Contents: This game entertains as well as educates children on the importance of the four major food groups in their diets (milk, meat, vegetable/fruit, cereal/bread). Each game includes an instruction sheet, 25 game cards for players and a sample completed game card.

Also included is a 22 x 28 inch "Daily Food Guide" which tells how many servings a person must have daily of each food group. (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Food and Nutrition News**

Contents: A 6-8 page periodical published five times in a calendar year: January-February, March-April, May-June, September-October, and November-December. Features a lead article by a noted authority. Timely nutrition topics and related topics of current interest are presented in lead and inside articles. Also: book reviews, scientific abstracts, and short items about nutrition, food, and health. Free in U. S. and its territories to nutrition, health and home economics professionals who write stating occupation on business letterhead. Not available to students.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Ideas for Better Eating: Menus and Recipes to Make Use of the Dietary Guidelines**

Contents: Ideas, recipes, and nutritional meals for better eating. 30 pages (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Light and Lean Beef Recipes**

Contents: Recipes and tips for those who want to lose weight sensibly and keep it off. Imaginative beef entrees are featured along with the caloric value of each serving. Contains nutrition information and other tips for the weight conscious. Printed in four colors. 9" x 4". 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Meat Builds Better Breakfasts**

Contents: Geared to the changing lifestyles of today, this colorful folder emphasizes the "why" of eating breakfast for family members of all ages. It provides a daily breakfast pattern with illustrations of traditional and non-traditional food choices from four food groups. Meat's value at breakfast time is explained. Printed in full color. 3-11/16" x 8-1/2". 6 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Meat In Nutrition and Health**

Contents: The proceedings of the "Meat in Nutrition and Health" symposium, held in Colorado on September 2, 1980, have now been collected into a hard bound book. Included are papers presented by participants of the symposium on the topics of meat as a food, meat in nutrition, meat in health, and meat in the future. References for each presentation and questions and answers which followed each session are also included. Printed in one color. 7" x 9-3/4". 210 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Nutritive Value of Foods**

Contents: A table of nutritive values for household measures of commonly used foods makes up a greater part of this bulletin. Values for phosphorus and potassium are included, and measures and values for all foods reviewed and updated as necessary. New information is provided on the dairy products group and on the enrichment levels of white bread and rolls, white flour, self-rising flour, and products prepared with these enriched flours; and on the fatty acid content of the foods. Home and Garden Bulletin No. 72.

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **The Hassle-Free Guide to a Better Diet**

Contents: This guide tells you the kinds and amounts of food that make up a nutritious diet. It divides commonly eaten foods into five groups, according to the contribution they make. No. 567.

Source: U. S. Department of Agriculture
Science and Education Administration
Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **The Lean Facts About Pork**

Contents: Completely revised with new nutrition data, this four-page, full-color leaflet emphasizes the nutritional benefits of pork. Brochure

includes colorful graph giving dietary contributions of one three-ounce serving of pork. 3-5/8" x 9".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Variety Meats**

Contents: Main-dish recipes are featured for beef, veal, pork, and lamb variety meats. Includes buying and preparation guides; lists nutritional value of each variety meat. Printed in 2 colors. 3-3/4" x 8-1/2". 12 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

C. FILMSTRIPS

Title: **Beef: Your Stake in Basic Nutrition**

Contents: Designed for high school students, this Meat Board audio-visual kit overviews the nutrient contributions of all foods and discusses nutrient functions of beef's key nutrients in detail. Explains the cholesterol and fat controversies, describes serving size and suggests ways of reducing calories by reducing fat in cooked meat. Activities in teacher's guide reinforces these concepts.

- Color Filmstrip - 63 frames, 14-1/2 minutes
- Cassette Narration - auto or manual
- Teacher's Guide - 16 pages
- Chart - % U.S. RDA, listing over 100 commonly eaten foods. 8-1/2" x 11", 4 pages

FILMSTRIPS (Continued)

- Beef Recipe Booklet - 30 copies
- Teacher's Reference - "The Nutritive Value of Meat"

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Campaigning for Nutrient Density**

Contents: This unique audio-visual kit helps junior high students understand the concept of nutrient density, as proven in an extensive field test. A press conference is the setting for the filmstrip, "Mr. Pigg Meets the Press," in which mayoral candidate Pigg is interviewed by an assortment of reporters (illustrated in political cartoon style). Humorous questions relative to misconceptions about pork add levity to the presentation and balance the more complex explanation of nutrient density.

- Color Filmstrip - "Mr. Pigg Meets the Press" - 96 frames, 16 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - 18" x 24", 2 sides, 2-color
- Printed Originals (for making quantity copies of student worksheets), 3 copies

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

D. CHARTS

Title: **Food Value Charts**

Contents: This set of charts was prepared for use in schools, nutrition clinics, and adult classes studying nutrition and food preparation.

Each chart gives a capsule story of key nutrients.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **"Four Food Groups for Better Meals" Game**

Contents: This game entertains as well as educates children on the importance of the four major food groups in their diets (milk, meat, vegetable/fruit, cereal/bread). Each game includes an instruction sheet, 25 game cards for players, and a sample completed game card. Also included is a 22 x 28 inch "Daily Food Guide" which tells how many servings a person must have daily of each food group. (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Percent U. S. RDA Chart**

Contents: This folder lists over 100 commonly eaten foods and gives the following information for each: size of serving, the number of calories provided by a serving, and the U.S. RDA percentage of the eight leading nutrients. 8-1/2" x 11". 4 pages, No. 17-101.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

IV. MEAT COOKING AND PREPARATION

A. TEXTS

Title: Lessons on Meat

Contents: A comprehensive four-color source book includes the latest research findings relative to meat's nutritive value, preferred cooking and freezing methods and buying guides. Helpful tips on meal planning, meat identification, new approved meat identification charts, carving and serving. 8-1/2" x 11". 86 pages.

Source:
National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Meat for the Table

Contents: Includes chapters on the economics of meat production, the meat packing industry, meat composition and nutritive value, cooking of meat, the art of carving, and pictures and diagrams of different cuts of meat. 1st Edition, 240 pages.

Source:
McGraw-Hill Book Co.
1221 Avenue of the Americas
New York, NY 10020
212-512-2000

Title: Meat in the Foodservice Industry

Contents: Written for the newcomer to the foodservice industry, this 80-page hard cover book is also a must for advanced foodservice students, salesmen, purveyors, foodservice employees with some experience and operators who want to build and improve their business. Covers basic meat information, its purchasing, buying, receiving and storing as well as large quantity cookery equipment, meat

cooking methods and timetables. Printed partially in full color. 8-3/4" x 11-1/4". 80 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Pork Slaughtering, Cutting, Preserving, and Cooking on the Farm**

Contents: Contains basic information about pork slaughtering, cutting, and preserving on the farmstead. 62 pages.

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Protecting Our Food: Yearbook of Agriculture, 1974**

Contents: Included are practical facts for the housewife in selecting and preparing food for her family, whys and hows of meat and poultry inspection, food grading, milk safeguards, the world problems in military and space operations. 416 pages (1974).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Quality of Ground Beef Patties Prepared by Microwave, Conventional, and Convection Methods**

Contents: Contains comparative information about the cooking of ground meat patties (1983).

Source: Jo Havens
Louisiana Tech University
College of Home Economics
(Thesis: M.S. in Home Economics)

Title: Quality of Top Round Roasts Prepared by Four Methods of Microwave Cookery

Contents: Contains information about the comparative cooking of top round roast (1983).

Source: Laura Booth
Louisiana Tech University
College of Home Economics
(Thesis: M.S. in Home Economics)

Title: The Heinz Book of Meat Cookery

Contents: Quick one-dish dinners, meats men like, feasts from leftovers, party platters, recipes for all meats. 107 pages.

Source: Josephine Gibson
H. J. Heinz Company
1062 Progress
Pittsburgh, PA 15212
412-237-5757

Title: The Meat We Eat

Contents: Chapter 20 has information about preparing and serving meats. 11th Edition (1977).

Source: Romans and Ziegler
The Interstate Printers
and Publishers, Inc.
Danville, IL 61832-0594
217-446-0500

Title: 365 Ways to Cook Hamburger

TEXTS (Continued)

Contents: This material is filled with innovative methods and recipes for cooking with hamburger. 189 pages.

Source: Doyne Nickerson
Doubleday and Company
501 Franklin Ave.
Garden City, NJ 11530
516-294-4561

Title: **Yellow Pages**

Contents: Answers to predictable questions consumers ask about meat, including nutrition of meat.

Source: American Meat Institute Foundation
Trade Distributor: Reinhold Publishing Corp.
135 W. 50th St.
New York, NY 10020
212-265-8700

B. PAMPHLETS

Title: **A Feast of Facts on Pork Cookery**

Contents: This audio-visual kit is the newest in a series on pork and is designed to teach junior high school home economics students the six cooking methods (moist heat and dry heat) used to prepare pork.

The filmstrip, "The Banquet of the Century," features celebrities attending the opening of Mr. Pigg's Pork Palace. Dennis Thornton, a T.V. reporter, interviews the famous guests to find which pork dishes they prefer and how they like them prepared.

All characters are animals drawn in cartoon style. This kit is a sequel to "Campaigning for Nutrient Density" and "The Art of Selecting Cuts of Pork," but can be used independently.

- Color Filmstrip - "The Banquet of the Century" - 94 frames, 13 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - 18" x 24", 2 sides, 2-color
- Student Booklet - "Focus on Pork" - 16 pages, 1 copy
- Black Line Masters - three titles

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **All About Cooking Beef Outdoors**

Contents: This full-color guide shows the way to greater enjoyment of beef in every outdoor cooking situation. It includes recipes for backyard, balcony, camping, picnics, tailgate and for entertaining larger groups. It contains information about equipment, building the fire, as well as open pit and covered pit barbeques for the very large groups. 5-1/2" x 8-3/4". 32 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **And The Winner Is... Ground Beef**

Contents: This six-page folder designed for junior high home economics or consumer education students, covers all aspects of buying, storage, cookery, and nutritive value of ground beef. Consumer buying principles are emphasized. Quantity orders will include a teacher's guide and printed originals (for making quantity copies of student worksheets). Printed in full color. 8-1/2" x 11". 6 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Basic Beef Cookery Teaching Kit**

Contents: A complete audio-visual kit for teaching beef cookery in home economics. Gives steps to use and lists cuts suited for each method.

Includes:
- Color Filmstrip - 101 frames, 20 minutes
- Cassette Narration - auto or manual
- Teacher's Guide - 20 pages
- Chart - Beef Cookery Methods" - 18" x 24", 2-color
- Spirit Duplicating Masters - two copies
- Teacher's Reference - "Basics About Beef"

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5502

Title: **Basics About Beef**

Contents: This colorful booklet contains information about buying, storing, preparing and serving beef. Also has student motivational instruments. 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title **Beef and Veal in Family Meals: A Guide for Consumers**

Contents: A buying guide for consumers trying to stay within their beef budget. No. B118.

Source: Office of Governmental and Public Affairs
U. S. Department of Agriculture
Washington, DC 20250

Title: **Beef Slaughtering, Cutting, Preserving, and Cooking on the Farm**

Contents: Consumer guide to slaughtering, cutting, preserving, and cooking of beef. Tips on how to cook better are included. No. F2263.

Source: Office of Governmental and Public Affairs
U. S. Department of Agriculture
Washington, DC 20250

Title: **Beef That Satisfies... The Microwave Way**

Contents: Microwave beef with success following the recipes and recommendations in this attractive full-color booklet. Sixteen easy-to-prepare recipes plus information on cut selection and step-by-step instructions for microwaving beef roasts, pot roasts, and burgers. Printed in full color. 5-1/2" x 7-5/8". 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Composition of Foods: Sausage and Luncheon Meats - Raw, Processed, Prepared**

Contents: Each page presents the nutrient profile of a single food item, given on the 100-gram food basis in common measure, and in the edible portion of one pound as purchased. Values are provided for refuse, energy, proximate composition, 7 mineral elements, 9 vitamins, individual fatty acids, cholesterol, total phytosteroids, and 18 amino acids. 92 pages (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Conserving the Nutritive Values in Foods**

Contents: Calls attention to some of the important nutrients in foods that are affected by different practices of handling and preparation and suggested ways these nutrients can best be conserved in the home. 11 pages (1983).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Cut Your Own Beef-In-A-Bag**

Contents: Consumer folder explains how to purchase boneless vacuum packaged subprimals, cut and wrap beef for savings and convenience. Also includes instructions on storing and cooking beef, as well as information on the importance and proper care of a sharp knife. Printed in two colors. 3-7/8" x 8-1/2". 10 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Dare to Excel in Cooking: Award Winning Group Recipes in USS Summary**

Contents: Recipes include soups, salads and dressings, poultry, meats, sauces and fish, cheese and eggs, vegetables, beverages, pies, cakes, and pastry. 52 pages (1968). No. DDG118.

PAMPHLETS (Continued)

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Eating for Better Health**

Contents: Contains breakfast, lunch, dinner, snack and low-calorie menus and recipes that are low cost and easy to prepare. 26 pages (1981).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Eat More Beef - Spend Less Money!**

Contents: Included in this 21-page booklet are cuts of veal, rib steak, baby beef T-bone, center blade chuck roast, and a baby beef crown roast. Also in this booklet are methods of cooking beef, plus some selected recipes. The guide has helpful hints on cooking beef.

Source: L.S.U. Cooperative Extension Service
Cooperative Extension Publication 1807
Baton Rouge, LA 70803

Title: **Facts About Beef**

Contents: Full-color folder gives latest information on beef selection, storage, freezing, cooking, carving and nutritive value. Six cookery methods colorfully pictured. Beef cooking timetables are included. Nutrients supplied by two beef servings daily are graphically portrayed, along with percentages of daily recommended allowances of 10 nutrients supplied by a three ounce serving of beef. 3-5/8" x 9". 10 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Facts About Ham**

Contents: Full-color folder includes information about buying, care and storage. Includes microwave instruction for ham, timetables for roasting, broiling and cooking in liquid. 12 pages.

Sources: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Facts About Lamb**

Contents: Latest data on selection, cooking, carving, freezing and defrosting lamb are covered in this folder. Six cookery methods illustrated in appetizing full color. Nutritive value of lamb is graphically portrayed; complete lamb cookery timetables also included. 3-5/8" x 9". 12 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Facts About Pork**

Contents: Up-to-the-minute facts about pork variety, selection, storage, freezing and defrosting, cookery, carving, and nutritive value are presented in this folder. Pork cookery methods are illustrated. Timetables are given for roasting, broiling, braising, and cooking in liquid. Graphs tell story of pork in relation to daily nutrient needs. Printed in full color. 3-5/8" x 9". 12 pages.

PAMPHLETS (Continued)

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Family Food Budgeting for Good Meals and Good Nutrition**

Contents: Contains information about consumer buying on a limited budget and the preparation of good and nutritious meals. 15 pages (revised 1981).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Focus on Pork**

Contents: This colorful booklet covers all aspects of buying, storing, preparing and serving pork and pork products. 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Food: A Publication on Food and Nutrition by United States Department of Agriculture**

Contents: Contains a hassle-free guide to a better diet, breakfast and snacking ideas, and recipes. 64 pages (1979).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Freezing Cooked and Prepared Foods**

Contents: This guide helps the cook get the most from the freezer. It also gives tips on planning freezer space and meals which are to be frozen.

Source: L.S.U. Center for Agricultural Sciences and Rural Development
Publication 1834
Baton Rouge, LA 70803

Title: **Getting to the Meat of the Matter on Processed Meats**

Contents: Four-page, full-color publication gives nutrition information about processed meats and discusses important issues such as salt additives, calories and fat. 3-5/8" x 9".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Guide to Budgeting for the Family**

Contents: An illustrated guide to buying, storing and cooking for the family. It includes recipes for main dishes and money-saving tips. 14 pages (1976).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Ideas for Better Eating: Menus and Recipes to Make Use of the Dietary Guidelines**

Contents: This material has information about better eating habits and dietary guidelines. Menus and recipes are included. 30 pages (1981).

PAMPHLETS (Continued)

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Lamb in Family Meals**

Contents: An illustrated guide to buying, storing, and cooking. Includes recipes using the particular product. 24 pages (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Lamb in Family Meals: A Guide for Consumers**

Contents: Tells how to identify lamb cuts in the market and provides tips on how to select good quality lamb, how to estimate the right quantity to buy, and how to store it properly. Also included are directions and timetables for cooking lamb, as well as recipes featuring lamb as a main dish. 21 pages (1982).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Lamb Slaughtering, Cutting, Preserving, and Cooking on the Farm**

Contents: Consumer guide to slaughtering, cutting, preserving and cooking of lamb. Tips on how to better prepare lamb are also included. No. F2264.

Source: Office of Governmental and Public Affairs
U. S. Department of Agriculture
Washington, DC 20250

PAMPHLETS (Continued)

Title: **Let's Have a Porkecue**

Contents: Full-color booklet featuring pork recipes for grill and outdoor cookery. 8 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Piggy Bank Pork Recipes**

Contents: Convenient, self-indexed 4" x 6" folder containing 10 economy-type pork recipes featuring a variety of pork cuts. Illustrated with full-color pictures. 10 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Pork in Family Meals: A Guide for Consumers**

Contents: A consumer buying guide for people on a meat budget. No. G160.

Source: Office of Governmental and Public Affairs
U. S. Department of Agriculture
Washington, DC 20250

Title: **Pork in Family Meals: A Guide for Consumers**

Contents: Tells how to identify fresh and cured pork cuts in the market and provides tips on how to select good quality pork, how to estimate the right quantity to buy, and how to store it properly. Also includes directions and timetables for cooking pork, as well as recipes featuring pork as a main dish. 33 pages (1982).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Pork... in the Foodservice Industry**

Contents: This booklet is designed specifically for the foodservice and hospitality industry to explain pork, its place on the menu and its versatility and promotional possibilities in the hotel, institution and restaurant field. Provides reasons why pork can be a profitable item in almost any foodservice operation. Printed in full color. 3-3/4" x 8-1/2". 40 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Pork's Great Outdoors**

Contents: Selecting cuts for rotisserie, grill or kabobs. Recipes for pork in outdoor cooking. 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Pork on a Budget**

Contents: Eighteen economical and delicious pork recipes are featured in this full-color booklet to help consumers meet the challenge of stretching their food dollar. Included are smart shopping tips and important nutrition information. Printed in full color. 5-1/2" x 7-5/8". 16 pages.

PAMPHLETS (Continued)

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Pork Slaughtering, Cutting, Preserving, and Cooking on the Farm**

Contents: A 65-page booklet including selection and care of animals before slaughter; preparing for slaughter; slaughter; chilling the carcass; cutting, freezing, and frozen storage; further processing; meat cookery and precautions.(1978) No. 2265.

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Pork Today - Stir-Fry Recipes**

Contents: Full-color folder features stir-fry technique tips and 7 tasty, internationally-inspired recipes. Fits conveniently into a 3" x 5" recipe file box. Printed in four colors.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Pork Today - 30-Minute Pork Recipes**

Contents: Full-color folder with 7 main dish recipes you can make with ease from refrigerator to table in 30 minutes or less. Fits conveniently into a 3" x 5" recipe file box.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

PAMPHLETS (Continued)

Title: **Six "Pork's Serving America More" Recipes**

Contents: Set of six colorful recipes created specifically for the foodservice industry. The entrees are Oriental Pork Stir-Fry, Pork Tenderloin with Raisins, Pork Layered Sandwich, Stuffed Pork Chops, New England Pork Pasty and Ham Mousse Salad. Each card 8" x 5".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **The Host and Hostess Cook'n Carve**

Contents: This 21-page booklet is filled with information about cooking and buying beef, lamb, pork and poultry.

Source: Swift and Company
1919 Swift Drive
Oak Brook, IL 60521
312-850-5606

Title: **The Meat Board Guide to Identifying Meat Cuts**

Contents: Booklet provides basic information on the selection, identification and recommended cookery method for retail meat cuts. Contains full-color photographs identifying retail cuts of beef, pork, lamb, veal and variety meats. A valuable aid in teaching meat identification to high school home economics and meat science students and consumers in general. 4" x 9". 48 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

PAMPHLETS (Continued)

Title: **Variety Meats**

Contents: Main-dish recipes are featured for beef, veal, pork, and lamb variety meats. Includes buying and preparation guide; lists nutritional values of each variety meat. Printed in 2 colors. 3-3/4" x 8-1/2". 12 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

C. FILMSTRIPS

Title: **A Feast of Facts on Pork Cookery**

Contents: This audio-visual kit is the newest in a series on pork and is designed to teach junior high school home economics students the six cooking methods (moist heat and dry heat) used to prepare pork.

The filmstrip, "The Banquet of the Century," features celebrities attending the opening of Mr. Pigg's Pork Palace. Dennis Thornton, a T.V. reporter, interviews the famous guests to find which pork dishes they prefer and how they like them prepared.

All characters are animals drawn in cartoon style. This kit is a sequel to "Campaigning for Nutrient Density" and "The Art of Selecting Cuts of Pork," but can be used independently.

- Color Filmstrip - "The Banquet of the Century" - 94 frames, 13 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - 18" x 24" - 2 sides, 2 color
- Student Booklet - "Focus on Pork" - 16 pages, one copy
- Black Line Masters - three titles

FILMSTRIPS (Continued)

Source: National Live Stock and Meat Board
444 Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Basic Beef Cooking Teaching Kit**

Contents: A complete audio-visual kit for teaching beef cookery in home economics. Gives steps to use and lists cuts suited for each method. Includes:

- Color Filmstrip - 101 frames, 20 minutes
- Cassette Narration - auto or manual
- Teacher's Guide - 20 pages
- Chart - "Beef Cooking Methods" - 18" x 24", 2-color
- Spirit Duplicating Masters - two copies
- Teacher's Reference - "Basics About Beef"

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

D. CHARTS

Title: **A Feast of Facts on Pork Cookery**

Contents: This audio-visual kit is the newest in a series on pork and is designed to teach junior high school home economics students the six cooking methods (moist heat and dry heat) to prepare pork.

The filmstrip, "The Banquet of the Century," features celebrities attending the opening of Mr. Pigg's Pork Palace. Dennis Thornton, a T.V. reporter, interviews the famous guests to find which pork dishes they prefer and how they like them prepared.

All characters are animals drawn in cartoon style. This kit is a sequel to "Campaigning for Nutrient Density" and "The Art of

Selecting Cuts of Pork," but can be used independently.

- Color Filmstrip - "The Banquet of the Century " - 94 frames, 13 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - 18" x 24", 2 sides, 2-color
- Student Booklet - "Focus on Pork" - 16 pages, one copy
- Black Line Masters - three titles

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Basic Beef Cookery Technique Kit**

Contents: A complete audio-visual kit for teaching beef cookery in home economics. Gives steps to use and lists cuts suited for each method. Includes:

- Color Filmstrip - 101 frames, 20 minutes
- Cassette Narration - auto or manual
- Teacher's Guide - 20 pages
- Chart - "Beef Cookery Methods" - 18" x 24", - 2-color
- Spirit Duplicating Masters - two copies
- Teacher's Reference - "Basics About Beef"

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Be a Smarter Meat Shopper**

Contents: Booklet designed to answer questions frequently asked at the meat counter. Explains retail cut labeling; provides illustrated charts for beef, pork, lamb and veal. Also includes information on ground beef and ground pork; inspection and grading;

buying; storage; and has a complete description of cookery methods, including microwaving meats. Printed in two colors. 5-1/2" x 7-1/2".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Beef Buyer's Guide**

Contents: Handy pocket- or purse-size slide rule calculator helps shoppers make the most of their beef dollar. Converts price per pound to cost per serving and contains beef identification chart, food buying tips for shoppers and description of the basic beef cookery methods. Printed in full color. 3-7/8" x 9".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Beef is... A Brunch Favorite**

Contents: Full-color folder provides 6 unique beef entree recipes for brunch entertaining. Also includes a seasonal menu for each recipe. Fits conveniently into a 3" x 5" recipe file box.

Source: National Live Stock and Meat Board
444 Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Beef is... A Fast Favorite**

Contents: Full-color folder features 10 main dish beef recipes designed for rapid skillet, broiler

and outdoor grill cooking. Fits conveniently into a 3" x 5" recipe file box.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Creative Microwaving with Sausage**

Contents: Microwave sausages with success following the recipes and recommendations in this full-color folder. Each recipe is printed on a 3" x 5" panel that is perforated so that it can be easily separated and placed in your recipe file.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Food Value Charts**

Contents: This set of charts was prepared for use in schools, nutrition clinics, adult classes studying nutrition and food preparation. Each chart gives a capsule story of key nutrients.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Pork Buyer's Guide**

Contents: Handy pocket- or purse-size slide rule calculator helps shoppers make the most of their pork dollar. Converts price per pound to cost per serving and contains pork identification chart, food buying tips for shoppers and description of the six basic

cookery methods (with illustrations). Printed in full color. 3-7/8" x 9".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **The Meat Board Beef Steak Color Guide**

Contents: This guide shows cross-section cuts of beef top loin steaks broiled to internal temperatures ranging from very rare (130°F) to very well done (180°F). Illustrating the terms rare, medium rare, etc., it is an excellent guide to steak preparation. Printed in full color on high quality polished plastic which can be easily wiped clean. 8-1/2" x 11".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

V. MEAT CUTTING AND MERCHANDISING

A. TEXTS

Title: How to Carve Meat, Game and Poultry

Contents: The book explains step by step procedures for making different cuts of meat, plus it gives lessons on the anatomy of beef, pork and lamb. There are also helpful suggestions on meat tenderizing. 209 pages.

Source: M. O. Cullen
McGraw-Hill Book Co.
1221 Avenue of the Americas
New York, NY 10020
212-512-2000

Title: Livestock and Meat Marketing

Contents: Contains basic information about wholesale and retail meat marketing.

Source: AVI Publishing Company, Inc.
250 Post Rd. East, P. O. Box 831
Westport, CT 06881
203-226-0738

Title: Meat Cutting - Individual Study Guide

Contents: Contains assignment sheets, information sheets and references. 200 pages.

Source: Ohio Curriculum Material
Ohio State University
Columbus, OH 43210

Title: Meat, Poultry, and Seafood Technology

Contents: This text has been assembled after many years of accumulating facts and preparing them for use by the student. Special care has been taken to provide practical information for those interested in food selection, processing, preparation, preservation and serving of meat. 276 pages (1978).

TEXTS (Continued)

Source: Robert L. Henrickson
Prentice-Hall, Inc.
Englewood Cliffs, NJ 07632
201-592-2000/1-800-624-0024

Title: **Pork Slaughtering, Cutting, Preserving and Cooking on the Farm**

Contents: Contains basic information about pork slaughtering, cutting, and preserving on the farmstead. 62 pages.

Source: Superintendent of Documents
Government Printing Office
Washington, DC 20402

Title: **Practical Meat Cutting and Merchandising,** Volume I

Contents: Provides information on cutting, handling and merchandising of all cuts of beef offered in butcher shops and supermarkets. 235 pages.

Source: Thomas Fabbricante and William J. Sultan
AVI Publishing Co., Inc.
250 Post Rd. East, P. O. Box 831
Westport, CT 06881
203-226-0738

Title: **Practical Meat Cutting and Merchandising,** Volume II

Contents: This text gives detailed instructions, illustrated with 300 drawings, on the cutting of pork, lamb and veal for merchandising. 206 pages.

Source: Thomas Fabbricante and William J. Sultan
AVI Publishing Co., Inc.
250 Post Rd. East, P. O. Box 831
Westport, CT 06881
203-226-0738

TEXTS (Continued)

Title: **Processed Meats**

Contents: This book was written to serve as a text and reference for advanced undergraduate and graduate students enrolled in meat processing courses. The emphasis of the book is on sausages, smoked meats, and meat canning. 348 pages (1973).

Source: W. E. Kramlich and F. W. Tauber
AVI Publishing Co., Inc.
250 Post Rd. East, P. O. Box 831
Westport, CT 06881
203-226-0738

Title: **Training Manual for Meat Cutting and Merchandising**

Contents: Information on beef carcass primal and subprimal cuts, beef flank, hindshank and foreshank, beef round, beef loin, beef forequarter and strip, beef rib, beef arm and chuck, pork carcass, lamb carcass and veal carcass. 156 Pages.

Source: Thomas Fabbricante
AVI Publishing Co., Inc.
250 Post Rd. East, P. O. Box 831
Westport, CT 06881
203-226-0738

B. PAMPHLETS

Title: **Assessment of Proposed Net Weight Labeling Regulations for Meat and Poultry Products**

Contents: This study evaluates the potential economic impact on consumers, industry and inspection officials, and concludes the proposed regulations have been grossly misunderstood by both consumers and producers. 55 pages (1979).

PAMPHLETS (Continued)

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Beef Slaughtering, Cutting, Preserving and Cooking on the Farm**

Contents: Consumer guide to slaughtering, cutting, preserving and cooking of beef. Tips on how to cook better are included. No. F2263.

Source: Office of Governmental and Public Affairs
U.S. Department of Agriculture
Washington, DC 20250

Title: **Cut Your Own Beef-In-A-Bag**

Contents: This material explains how to purchase boneless vacuum packaged subprimals, cut and wrap the beef for savings and convenience. Also includes information on storing and cooking beef. 10 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Food Service Manual, Including A Model Food Service Sanitation Ordinance, 1976 Recommendations of the Food and Drug Administration**

Contents: Discusses the need, purpose, and scope of a sanitation program, tells you how to conduct an effective program, and provides a model food service sanitation ordinance, incorporating the 1976 recommendations of the Food and Drug Administration. 96 pages (1978).

PAMPHLETS (Continued)

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **4-H Swine Project Manual - Modern Meat-Type Hogs**

Contents: A 17-page guide describing modern meat hogs yielding superior meat type quality and finish. Included is a pork chart which shows retail cuts, where they came from, and how to cook them. Also, a breed and breed characteristics section is included, plus addresses of purebred swine associations. A small glossary of pork-related terms and three statistical graphs are also included.

Source: L.S.U. Cooperative Extension Service
Baton Rouge, LA 70803

Title: **Health and Safety Guide for Food Processors**

Contents: Contains federal regulations as to safety and health standards for food processors. 84 pages.

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **How to Carve a Picnic Shoulder**

Contents: This pamphlet shows how to carve a pork picnic shoulder into attractive servings.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **How to Get the Most for Your Pork Dollar**

Contents: This material contains money-saving hints on the purchasing of wholesale cuts like smoked ham, blade Boston shoulder and whole pork loins. Includes at-home cutting instructions. 10 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Lamb Slaughtering, Cutting, Preserving and Cooking on the Farm**

Contents: Consumer guide to slaughtering, cutting, preserving, and cooking of lamb. Tips on how to better prepare lamb are also included. No. F2264.

Source: Office of Governmental and Public Affairs
U. S. Department of Agriculture
Washington, D. C. 20250

Title: **Merchandising Beef: Muscle Boning the Chuck**

Contents: This 19-page booklet gives step by step instructions for making boneless inside chuck, chuck tender, boneless neck, boneless stew, individual Swiss steaks, ground chuck, shoulder clod steaks, shoulder clod pot-roasts, chuck short ribs, petite steaks, triangle, and chuck rib pot roast from the beef square cut chuck.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

PAMPHLETS (Continued)

Title: **Merchandising Fresh Pork Loins**

Contents: This pamphlet contains information on 30 ways to cut whole pork loins. Also contains tests for comparing different types of wholesale loins and information on vacuum packaging. 10 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Merchandising Ideas for Fresh Pork Shoulders**

Contents: This merchandising manual illustrates 13 ways to cut and merchandise fresh pork shoulders complete with 68 detailed illustrations. 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
3120467-5520

Title: **Merchandising Pork Legs (Fresh Hams)**

Contents: This manual contains 73 illustrations showing the merchandising procedures for fresh pork legs (fresh hams). 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Merchandising Pork: Rolling the Fresh Leg**

Contents: This 4-page booklet gives detailed illustrated instruction for making a symmetrical boneless roast from a leg of pork (fresh ham).

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **More Meals from Meat**

Contents: This pamphlet gives details for the cutting of beef arm pot-roast, pork Boston butt, lamb leg, porterhouse steak, lamb square-cut shoulder, beef blade rib roast, and smoked ham.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Pork Slaughtering, Cutting, Preserving and Cooking on the Farm**

Contents: A 65-page booklet, including selection and care of animals before slaughter; preparing for slaughter; slaughter; chilling the carcass; cutting, freezing and frozen storage; further processing; meat cookery and precautions. (1978) No. 2265.

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Prepackage Meats for Self-Service**

Contents: This manual is designed to help retailers convert their meat department to a self-service basis by profiting from the experience of those who have preceded them. This is a booklet for the merchandising of meat.

PAMPHLETS (Continued)

Source: E. I. DuPont de Nemours and Co.
Wilmington, DE 19898
302-774-1000

C. FILMSTRIPS

Title: **How to Buy Beef**

Contents: Presents a guide to buying beef by U.S.D.A. grade and by cut, and specifies which cuts are the most tender.

Source: U. S. Department of Agriculture
Photo Lab, Inc.
Washington, DC 20402

VI. MEAT EVALUATION

A. TEXTS

Title: **Livestock Judging, Selection and Evaluation**

Contents: This text presents livestock judging, selection, and evaluation in a practical, brief manner. Considerable discussion is devoted to the influence which conformation and finish have upon value of carcass and there is an extensive description included for each kind of livestock. Also, the most up-to-date pictures and diagrams are included. 527 pages (1978).

Source: Roger E. Hunsley, W. Malcolm Beesen and Julius E. Nordby
The Interstate Printers and Publishers, Inc.
19-27 N. Jackson St.
Danville, IL 61832-0594
217-446-0500

Title: **Meat Evaluation Handbook**

Contents: This material has information on 190 full-color photographs of beef carcasses - wholesale cuts, quality grades, yield grades; pork carcasses - cut grades; lamb carcasses - quality yield grades. Information is also provided on color, texture, finish, quality, muscling, firmness, marbling, cutability and conformation. 70 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Meat Evaluation Series**

Contents: This three-part publication has information about beef carcasses, pork carcasses, and retail cuts. This material is recommended for preparing students for meats judging contests.

TEXTS (Continued)

Source: Ohio Curriculum Material
Ohio State University
Columbus, OH 43210

Title: **Meat Handbook**

Contents: This text has information about grading, purchasing, cooking, and identification of meats.

Source: Albert Levie
AVI Publishing Company, Inc.
250 Post Rd. East, P. O. Box 831
Westport, CT 06881
203-226-0738

Title: **Meat Processing Plant Employee**

Contents: This material contains 70 topics, including meat quality, carcass classification and grading, meat fabrication, meat by-products, and marketing. It also contains course outlines, assignment sheets and topic test with answers. 322 Pages.

Source: Ohio Curriculum Material
Ohio State University
Columbus, OH 43210

B. SLIDES

Title: **Beef Carcass Grading Quality and Yield**

Contents: This set of 50 color slides shows various degrees of marbling and maturity of beef carcasses. The set illustrates C maturities and actual rib eye tracings for student to estimate rib eye size. Rib eye and KD # fat are shown for each carcass. All carcasses are yield and quality graded. Rib eye tracing, keys, and comments on maturity are included.

SLIDES (Continued)

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-563-3446/1-800-558-9595

Title: **Meat Evaluation Handbook Judging Slides**

Contents: This material has 95 color slides taken from classes illustrated in the "Meat Evaluation Handbook." It is recommended in training of meat judging and in use with the "Meat Evaluation Handbook."

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Meats Judging Classes**, Sets 1 and 2

Contents: This set of 84 color slides contains 5 beef carcass classes, 5 pork carcass classes, 5 beef wholesale (rib, chuck, round), 5 ham classes, and 8 lamb carcass classes. Slides detail fat and rib eye. Official placings and cuts are included.

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-563-3446/1-800-558-9595

Title: **U.S. Grades of Beef Carcasses**

Contents: This set of twenty color slides was developed by the U.S.D.A. for teaching U.S. grades of beef carcasses. The slide set illustrates the 8 U.S.D.A. grades of meat. A lecture guide is included to provide detailed explanation of each grade.

SLIDES (Continued)

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-563-3446/1-800-558-9595

C. FILMSTRIPS

Title: **USDA Swine and Pork Carcass Grades**

Contents: After a one-frame history of U.S.D.A. grading of swine, the filmstrip features side, rear, top, carcass, and cut views of U.S.D.A. No. 1, 2, 3, 4, and utility. The basic specifications of each grade are emplasized throughout the filmstrip. Shipping weight 9 ounces.

Source: NASCO
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